CHEMICAL MARKETS

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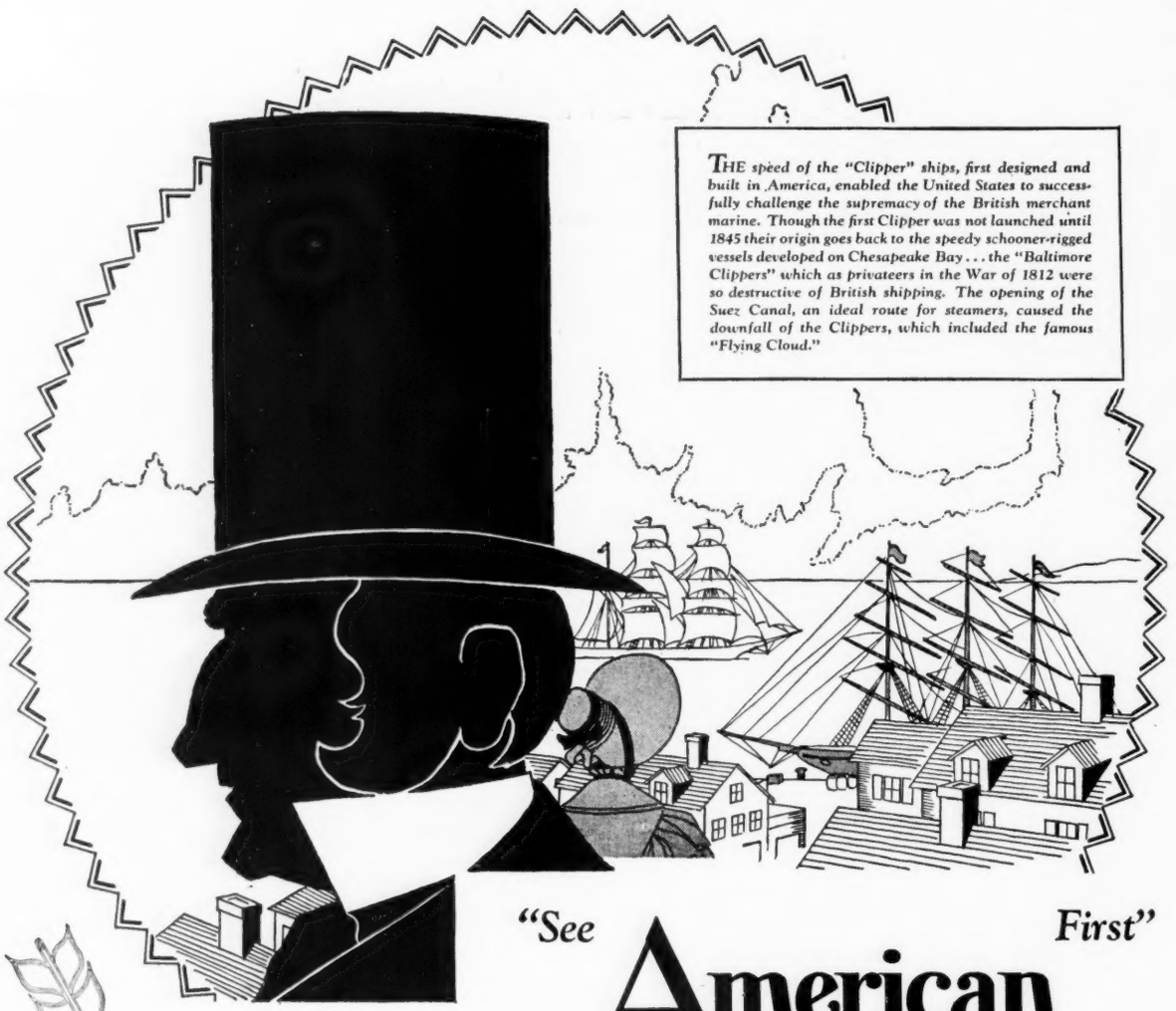
A New Phase of Big Mergers

IN these days of lightning-change consolidations even the active heads of the chemical industry, as one of them confessed the other day, cannot always be quite certain whether they are talking to a competitor or a confederate. Confusion is further confounded by the comparatively new theory of mergers. No longer is the primary object to temper a too-keen competition; to reduce excessive costs; to increase efficiency; and thus by joining forces to insure greater profits. The logic behind many recent consolidations is obviously to be only explained as an offer to strengthen the merged companies by spreading their activities.

ACCORDINGLY, there is at present little scrapping of plant and few changes in personnel. The gross volume of business done by the newly-wed companies adds up to inspiring totals, and all proceeds as merrily as the proverbial wedding bell. But when the honeymoon wanes, when these fine consolidated sales must be balanced against the consolidated expenses (not forgetting the increased capital charges) then, will come that trying time when the happy young couples settle down to house-keeping in their own new homes. This difficult period of internal readjustment is not going to be made any simpler by the fact that some of these new industrial households have been patterned after the harem of the Great Mogul with wives, concubines, and dancing girls. It is preposterous to believe that there will be no squabbles, no smash-ups.

SUCH internal readjustments chiefly concern the individual mergers; but there is, however, a broader aspect to this consolidating phase of chemical industry. At the moment the American public with curious unanimity looks favorably upon mergers. But already we can detect signs of an ominous, coming change, and there is a deal of deep significance in Governor Roosevelt's speech at the dedication of the new Tammany Hall. He viewed with an astute politician's alarm the growing influence of big business in government activity. This is an astonishing discovery for the hearty supporter of Smith's government-owned power projects; but it is not the least inconsistent as a feeler for a good campaign issue for 1932. The Governor of New York is a shrewd man who is being groomed for the presidency by the most practical group of politicians in the country.



THE speed of the "Clipper" ships, first designed and built in America, enabled the United States to successfully challenge the supremacy of the British merchant marine. Though the first Clipper was not launched until 1845 their origin goes back to the speedy schooner-rigged vessels developed on Chesapeake Bay . . . the "Baltimore Clippers" which as privateers in the War of 1812 were so destructive of British shipping. The opening of the Suez Canal, an ideal route for steamers, caused the downfall of the Clippers, which included the famous "Flying Cloud."

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A Lusty Pigmy

We have from time to time suspected that the American chemist suffered from an inferiority complex; but we have never dreamed that American chemical executives labored under the handicap of such false modesty. We are, therefore, somewhat surprised that our mail has brought no challenge of the sweeping statements which we quoted last month from the "Manchester Guardian."

> The chemistry of to-day remains almost wholly the product of British and German research, while the chemical trade of the world is dominated by two firms—one British and the other German. These two—Imperial Chemical Industries and the I. G. Farbenindustrie—might almost be called the nationalized chemical industries of their respective countries; beside them a representative American firm such as the Du Pont de Nemours & Co., despite its growth last year, is a mere pigmy.

Any undesirable inhibitions which might be prompted by such a devastating declaration may be quickly dispelled by a few facts.

Our distinguished and usually accurate British contemporary has quite plainly forgotten that the greatest chemical consuming market in the world lies within these United States and that it is supplied by a domestic chemical production valued at two and a half billion dollars and by imported chemicals worth one-fifth of a billion. Not only is our chemical output greater than the production of either Germany or England but of our imports 73 per cent are crude raw materials, our five leading chemical imports being nitrate of soda, creosote, potash fertilizers, China wood oil, and varnish gums. The rivals of our American chemical industry can then hardly be said to dominate in what is the principal consuming center of the world, while the League of Nation's statistics credit the three leading chemical countries with a total export business for Germany of 221 million dollars; United States, 155 millions, and Great Britain, 131 millions. Subtracting from Germany's total foreign trade the 36 millions shipped to us and from Great Britain's her 15 millions, it would appear that in the general world trade outside the United States we are a distinctly good second.

With a wholesome respect for the accomplishments of German and British chemical research, we may still point with pride to the American technologists who have given us within ten years working, commercial processes in petroleum refining, for phthalic anhydride, aniline oil, phosphoric acid, butanol, a score of useful aliphatic compounds, phenol, and several new coal-tar dyes. The relative importance of chemical products and processes is always debatable; but without making claims, we can maintain that these are major developments which make a real contribution to chemical advance.

It is quite true, as the "Guardian" points out, that we have in America no single dominating chemical collosus. We have, however, three companies the very least of which, even when measured against these "nationalized chemical industries," hardly fits within the pigmy class. The reported gross earnings for the past fiscal year of these five are du Pont, 66 millions; I. G., 61 millions; Union Carbide, 39 millions; Allied Chemical & Dye, 29 millions, and the I. C. I. 26 millions. These figures are reasonably comparable since all these giants have large investments in securities and in subsidiaries and also are manufacturing or interested in such allied lines as explosives, metals, rayon, lacquers, plastics, and what not of a chemical or semi-chemical nature. Furthermore, outside of their nationalized industries neither Germany nor England can show the chemical strength as displayed by such American companies as Cyanamid, Dow, Mathieson Alkali, Merck, Monsanto, or any one of the "big six" among our fertilizer manufacturers.

We protest the accuracy of "almost wholly the product of British and German research;" "chemical trade of the world dominated by two firms", and "a mere pigmy."

The Scapegoat

That the mere mention of "chemicals" is still a sufficiently terrifying boogey to cause the sounding of alarms throughout the length and breadth of the land is an amazing but painful truth. The popular mind and, we regret to state, the popular press, in most cases is prone to decide with amazing promptness, but with slight regard for accuracy, that this chemical or that chemical is to blame when anything goes wrong. In an instant the facts concerning the contributions of chemistry and chemicals to civilization and progress are discarded and the popular hysteria rises only to condemn.

The recent uproar from Chicago concerning the use of methyl chloride as a refrigerant is a case very much in point. This public-spirited citizen and that public-spirited citizen, this newspaper and that newspaper, rose in a glow of righteous indignation to denounce the use of this chemical, or that chemical, or in fact any chemical, by manufacturers of refrigerators intent only upon their profits

and reckoning naught of the tremendous sacrifice of human life. In something of the same manner some of our early ancestors must have protested the use of fire. Fortunately for their descendants, better judgment prevailed.

And, after the first outburst, better judgment prevailed in Chicago. It was finally pointed out that the fault was with the so-called multiple systems and not with this or that refrigerant. But the harm had been done, chemicals were once more dishonored and disgraced, and, needless to say, nothing like the same amount of publicity was given to rectifying the impression as had been given to creating it. If this were the first time that popular attention had been directed against chemistry and chemicals, the damage would be insignificant. But time and again, after public confidence has been built up by the recital of what the science and the industry are doing to improve life and living conditions, something of this sort happens and the chemical is blamed.

The chemical industry is essential to progress and welfare and on the record of its past achievements demands the highest degree of public respect and confidence. Untold harm is done by such public officials and such representatives of the popular press who continually make it the scapegoat.

Quotation Marks

Britain only began producing synthetic nitrogenous fertilizers after 1920, and there has been since then a phenomenal growth in production. In 1928 it exceeded a quarter of a million tons, a volume four times as much as in 1927 and eight times as much as in 1924. By the end of this year, when the additional units will be in operation at the Billingham works of Synthetic Ammonia and Nitrates, Ltd. (a subsidiary of I. C. I.), the production will be on the basis of over three-quarters of a million tons per annum. This great increase in production capacity of I. C. I. has enabled the recent negotiations to be conducted on equal terms with the German synthetic industry, which commenced production in 1913, and with the Chilean nitrate producers, who have been established for a great many years.—*Chemical Age.*

In recent years one industry after another has discarded with gratifying results "hit and miss" methods of measuring operating temperatures in favor of accurate scientific instruments. Many others are seriously considering doing so. Lack of scientific temperature control has been responsible for many troubles and a considerable monetary loss.—*Arthur D. Little Bulletin.*

Until three years ago at the outside, it is safe to say that neither the German nor the British producers of fixed nitrogen were inclined seriously to accept the quota terms suggested by the Chilean producers, and it is only the remarkable strides that have been made by the Chilean industry, in co-operation with the Chilean Government that has once more secured for the natural nitrate a position of equality at least, in the councils of the world's nitrogen producers.—*Chemical Trade Journal*

It is clear why we have termed rayon a chemical yarn and the rayon industry a chemical industry. It is chemical not only because it consumes a large amount of chemicals in its manufacturing operations but because its very production depends very largely upon chemical principles and chemical reactions.—*Rayon and The Rayon Industry.*

Great Britain has set an effective example to the world in the organization of agricultural research. Other nations may spend more money in fostering such, but there is no country which has so efficiently covered the field of research in agriculture as Great Britain.—*Lord Melchett.*

We have increased the physical output per man employed in the manufacturing industry by 50 per cent in the last twenty-five years.—*R. P. Lamont.*

Ten Years Ago

From our issues of August, 1919

H. J. Baker & Bro. sold a 30,000 ton lot of Nebraska potash, said to be one of the largest transactions in potash in recent years.

Smith Color & Chemical Co. is incorporated in New York with capital of $5,000.

Newport Co. was incorporated in Delaware and assumed control of the Newport Chemical Works of Carrolville, and the Newport Turpentine & Rosin Co. of Florida. With completion of reorganization by Schlesinger interests, company issued statement showing net earnings of $1,350,000 per year and gross income exceeding $5,500,000.

U. S. Industrial Alcohol Co. announced plan of new financing by which capital was increased from $12,000,000 to $24,000,000 and 120,000 shares of common stock were sold to stockholders share for share at $70 per share.

United States Potash Co. was incorporated in Baltimore with capital stock of $5,000,000 by Howard S. Jefferson, Frank T. Whitney, and Arthur T. Woldenhen.

Southern Agricultural Chemical Corp. was incorporated under the laws of Virginia with capital of $1,000,000, by the Tennessee Copper & Chemical Corp., as a selling organization to handle its production of sulfuric acid and acid phosphate. Officers were Adolph Lewisohn, president; Sam A. Lewisohn, E. H. Westlake, and A. M. Sterne, vice-presidents; and F. M. Loper, secretary-treasurer.

H_2O
As A Chemical Raw Material

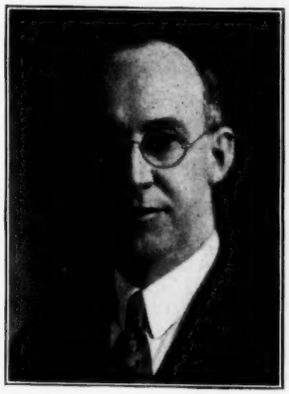
By Charles P. Hoover
Water Softening and Purification Works, Columbus

IN a small city in the State of Ohio, an industrial plant using a large supply of chemicals in the manufacture of their product, paid annually $320.00 for its entire water requirements. The supply was not metered but paid for on the flat rate basis.

The water furnished was sometimes clear, sometimes muddy, sometimes soft and sometimes hard, making it a very unsatisfactory supply.

Several years ago the City installed a modern water softening and filtration plant. The water is now always sparkling clear, has a uniform hardness of about three grains per gallon and is now sold by measurement through a meter.

The manager of the industrial plant referred to above is one of the best pleased customers in the City because the product he produces is now more uniform than formerly due to a uniform quality of good water and he is better satisfied, in spite of the fact that the water bill now with practically the same requirements, amounts to $1,650.00 per year five times as much as in the past. Had he realized the advantages of good water, he no doubt would not have waited for years for the City to supply him a satisfactory water but would have provided it for himself.



Water is an important raw material in the manufacture of chemicals and as such should satisfy certain specifications like any other raw material. As Mr. Hoover points out, a water bill five times as large may easily mean a lowering of production costs, together with a superior finished product.

Water actually becomes a part of many chemical products produced. When this is the case it certainly must be regarded as a raw material the same as other materials which make up the product and should in many instances at least, meet a required specification. If bad water is used and becomes a part of a chemical product its presence alone may make the product inferior or it may react unfavorably with other chemicals used in the process.

The quality of the water used directly in chemical manufacturing processes may not concern all manufacturers but almost all of them do require good water for washing and rinsing purposes, for steam generation and for condensing processes.

Water supplies are usually taken from surface sources, (i. e. rivers and lakes) or from wells.

Water taken from wells is usually clear, cool, free from tastes and odors but usually more highly mineralized than surface supplies. The minerals usually present and objectionable are calcium bi-carbonate (limestone), magnesium bi-carbonate (magnesite), calcium sulfate (gypsum), magnesium sulfate (epsom salts) and iron. These rock materials are dissolved by the water as it passes through the soil. Water seeping into the ground slowly will dissolve more rock material than water that runs over the surface of the ground; on the other hand water running over the ground will usually carry much more material in suspension. That is, it is usually muddy. Also it sometimes has a musty odor and smell, is usually not a safe water for drinking purposes unless filtered and disinfected. It is warm in the summer time. Ordinarily water to be satisfactory for general use should be: 1st. Clear; 2nd. Free from disease-producing bacteria; 3rd. Free from tastes and odors; 4th. Free from iron and manganese; 5th. Non-corrosive, i. e., Reasonably free from dissolved gases such as CO_2 and H_2S; 6th. Reasonably soft and low in dissolved solids; and 7th. Preferably cool at all times of the year.

The calcium and magnesium mineral constituents present in water are usually referred to as hardness salts. A water containing them is hard. The process of removing all or a part of them is known as softening. There are several objections usually ascribed to hard water.

Soap has no cleansing action until it lathers and it will not lather so long as hardness salts are in the water. Soap must therefore neutralize hardness before it is useful for cleaning purposes. The extravagance of removing hardness by soap can be appreciated when it is realized that a pound of lime will

neutralize as much hardness as 20 pounds of soap. The worst feature to the use of soap in hard water is that the soap used to neutralize hardness results in the formation of an insoluble curd which is a very objectionable form of dirt. Industries that use water for washing processes or have to wash containers with soap and water will find the waste of soap not only burdensome but the curd or scum formed, difficult to remove from the surface of the containers.

The heating of mineralized water precipitates the hardness salts as a solid, the most common illustration of which is found in the scale formed in the bottom of the tea kettle. This scale-like deposit also forms in plumbing pipes, heating coils, condensers, boiler tubes and boiler shells, where its appearance is not always noticed, but where its effects are reflected in the coal bill. With hard water the scale forms rapidly in heating coils and condensors and results in a relatively short time in a complete stoppage. The effects of bad water in boiler use are foaming, corrosion, formation of scale and may finally result in boiler failure.

In bleaching and dyeing of fabrics, the presence of iron or manganese may cause stains or may change the shades of the dyed materials. Hard water is entirely unsuitable as a solvent for some coaltar colors because they are partly precipitated in it. Hard water also usually dulls colors although there are a few dyes (alizarin and logwood) that react better to hard water than to soft. If hard water is used in the washing process, soap and soda compounds are required and their use results in the formation of soap curd or dirt that may adhere to the fibers. Dirt covered fibers sometimes take the dye more readily than is desired, in which case it acts as a mordant and the goods are over colored where not desired.

Water in Paper Making

In paper making the presence of iron in water is especially objectionable because of its staining qualities. Hardness also is objectionable because it decomposes rosin soap. In making felt for paper mill machines it has been noticed that if the water used is too slimy the wool fibers will not knot and snare together but will slip and the felt will stretch when there is a strain put on it. This slimy or slippery feel to the water may be caused by the softening process used. If overtreated with soda-ash or water of high initial carbonate hardness softened through zeolite may have it.

Very special water is required for tanning. According to Eitner[1] soft water produces thin flat hides and hard water fixes the dirt and greese. The sulfates of calcium and magnesium in general, produce good swelling, while the carbonates are detrimental. Chlorides arrest the swelling of hide, make tanning difficult, and when present in large amounts attracts moisture.

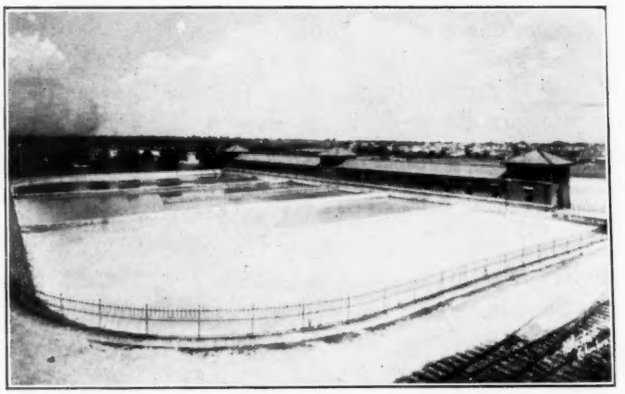
In sugar refining, according to Fischer[2], the sulfates and alkaline carbonates are more productive of molasses than the chlorides, whilst nitrates are especially objectionable, as they prevent the crystallization of six times their weight of sugar.

In addition to the above, the following classes of industry should give careful consideration to the quality of water that they use: manufacturers of all kinds of chemicals, manufacturers of ice and soft drinks; bakeries, creameries, canneries and other food producing agencies, starch works, photographic material's manufacturers, distilleries and numerous others.

Five Methods of Water Purification

Generally speaking there are five well-known methods of water purification. They are: 1st. Prolonged storage; 2nd. Filtration through slow sand filters; 3rd. Coagulation and filtration through rapid sand filters; 4th. Combined water softening coagulation and filtration through rapid sand filters; and 5th. Disinfection.

Purification by storage consists in storing water in basins or reservoirs for long periods of time. Storage affords an opportunity for the subsidence of silt and clar, reduction in color and the death of bacteria. It takes a long time for these results to be accomplished by storage alone. Bacteria and finely divided particles from clay-bearing streams are not entirely removed even after several weeks settling. The size of the basins or reservoirs required makes the process so



Purification of water by storage is restricted to large scale operation due to the expense involved. This shows the settling basins of the Columbus, Ohio, Purification Works

expensive that it may usually be regarded as unavailable.

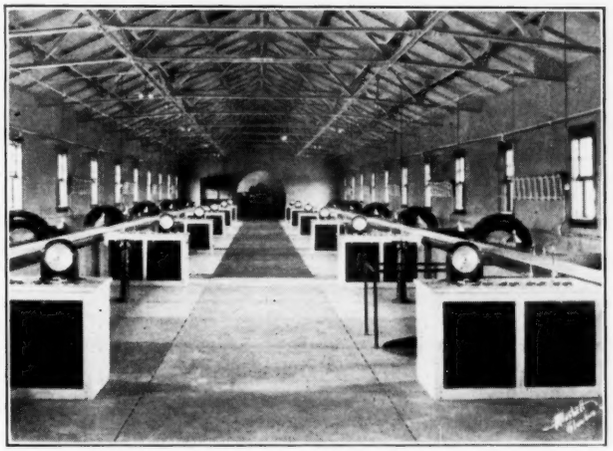
Slow sand filters are beds of sand 30 to 40 inches deep, contained in concrete basins each about one acre in extent. Water filters through these beds at a rate of from 2,000,000 to 10,000,000 gallons per day. When a filter gets clogged it is necessary to shut it down for cleaning. Several inches of filter sand must be removed, washed and replaced. This is a laborious job unless elaborate and adequate facilities are provided. Slow sand filters are expensive to build and

(1) Journal American Leather Chemists' Association, 1921.
(2) Technologie d. Wassers, page 286.

can not be used satisfactorily in the treatment of water from rivers that are at times extremely turbid. Slow sand filters are suitable only for the purification of reasonably clear water.

Pretreatment Before Filtration

In order successfully to filter water through sand filters at a high rate of filtration (one hundred to two hundred million gallons per day) it is usually necessary to pretreat the water ahead of the filters. This preparatory treatment consists in aeration to free the water from dissolved gases if present, coagulating with a coagulant (aluminum sulfate or iron sulfate and lime), and settling. The addition of the coagulant to the water following a short period of agitation results in the formation of a precipitate which entangles the mud and suspended matter into clumps which are readily settled out of solution. The settled water then passes to the filter which removes the finely divided suspended matter that does not settle in the settling tanks. Filters are usually built of concrete and are placed side by side in batteries. A modern filter might be described very briefly as being a concrete box or basin provided with a strainer system which is covered with 20 to 24 inches of graded gravel which supports from 24 to 30 inches of filter sand. Coagulated, settled water filters down through the sand and gravel. When the filter becomes clogged it is washed



A view of the interior of the filter room of the Columbus Purification Plant, showing the high-lift pumps

by forcing filtered water upward through the strainer system, gravel and sand. The sand is lifted and thoroughly agitated in the rising stream of clean water and all the finely divided suspended matter gathered at the surface is carried away in the wash water and wasted. After washing, the filter is again ready for service. The washing lasts from four to five minutes. Approximately 1,000 plants of this type have been built in the United States since 1890.

Disinfection is used for the destruction of bacteria and as a process is only suitable for the treatment of clear water. Its chief value is in its use as an adjunct to water filtration.

The hardness of most water supplies is due to four compounds which it holds in solution. They are: 1st. Calcium bi-carbonate (limestone); 2nd. Calcium sulfate (gypsum); 3rd. Magnesium bi-carbonate (magnesite); and 4th. Magnesium sulfate (ordinarily known as epsom salts).

Softening of water as has already been stated consists in removing all or a part of these salts from it. There are two well-known processes for softening water, the lime soda-ash process; and the zeolite process.

In using the lime soda-ash process for softening water, lime and soda-ash are added to the water to be softened. The chemicals are stirred into the water and the mixture agitated gently for about thirty minutes. During this time the lime reacts with the bi-carbonates of calcium and magnesium present in the water and insoluble precipitates of calcium carbonate and magnesium hydroxide are formed, and also the lime itself is converted into an insoluble precipitate of calcium carbonate. The soda-ash combines with the sulfates in the water and an insoluble precipitate of calcium carbonate results from this reaction. These precipitates are removed from the water by settling, leaving the water soft and practically clear. The softened water is then carbonated with carbon-dioxide gas. This gas is bubbled through the water in order to complete the chemical reactions which otherwise would be incomplete and stabilizes the water so as to prevent any subsequent deposits either on the filter sand or on the mains.

Washing the Filter

After carbonation the water is usually filtered through sand and gravel and is then ready to be pumped to the consumer. The filters remove any remaining fine particles in the water and deliver the water clear and sparkling. The removal of this finely divided suspended matter from the water by the filters in time tends to clog the surface of the filter so that it becomes necessary to clean it which is done by forcing water upwards through the strainer system, gravel and sand, and washing the sediment to the waste pipes. After this is done, the filter is again placed in service, and is good for another operating period, usually 24 to 72 hours. The time of washing a filter does not ordinarily exceed five minutes.

There are a number of companies producing and manufacturing zeolite material which is known by many trade names, such as Greensand, Permutit, Crystalite and Doucil. Manufactured zeolite is a chemical compound containing sodium, aluminum and silica and looks like coarse white sand. Water to be softened is brought in contact with the zeolite, usually, although not necessarily, in a pressure type filter. In large plants, open or gravity filters may be used to advantage. When hard water comes in contact with the zeolite material the calcium and magnesium salts in the water exchange places with the sodium of the

zeolite, thus removing the hardness from the water. When the zeolite has absorbed all the calcium and magnesium salts it can hold, or in other words when it has traded all of its sodium for calcium and magnesium, it is then necessary to regenerate the material by bringing salt water in contact with it.

Advantages of zeolite process are: 1st. Water softened through zeolite may be made to be entirely free from hardness, that is, the hardness may be reduced to zero; 2nd. Variations in the hardness of raw water are automatically taken care of; and 3rd. There is no sludge to be disposed of.

The disadvantages of zeolite process are: 1st. Cost of operation is higher than with lime and soda-ash if the water to be softened has high alkalinity; 2nd. Water to be softened must be perfectly clear, because if it contains any turbidity, the pores of the zeolite become clogged. Water must also be practically free from iron; 3rd. Bacteria are not killed; 4th. The total mineral content of the water softened will not be changed because by this process of softening, the calcium and magnesium are replaced by sodium. A high alkalinity water softened through zeolite will contain residual sodium bi-carbonate. The presence of this compound in the softened water may be objectionable for domestic consumption and is certainly objectionable if the water is used for boiler feed purposes because it is conducive to foaming; and 5th. Corrosive gases (CO_2 and H_2S) are not removed.

Recent advances in water softening by the lime soda-ash process and by the zeolite process have made it possible to use successfully a combination of the two in softening certain types of hard water.

This process is applicable to plants where the non-carbonate hardness of the water to be softened averages more than 85 parts per million. It has been demonstrated that in localities where salt can be obtained at a low cost, that it is cheaper to remove non-carbonate hardness with zeolite than with soda-ash.

The process of operating a lime zeolite softening plant would be about as follows: The water pumped into the plant would be first treated with lime and alum, mixed in the mixing tanks and then passed through the settling basins, to remove the precipitated carbonates. At the end of the settling basins, the lime-softened water would be carbonated with CO_2 gas in order to convert the normal carbonates to bi-carbonates, thus preventing the deposition of normal carbonates on the zeolite sand and to prevent the formation of normal sodium carbonate in the softened water. From the settling basins the water would flow through sand filters and after being filtered through sand filters would flow to zeolite filters and if desirable to reduce the water to zero hardness, all of the water would be passed through zeolite filters. If it was desirable to leave some residual hardness in the water, then of course it would only be necessary to filter a portion of the water through zeolite filters.

The Industry's Bookshelf

Salts, Acids and Bases: Electrolytes: Stereochemistry, by Paul Walden, 385 pages McGraw Hill Book Co., New York, $4.00 net.

A series of lectures delivered at Cornell University dealing with the history of chemistry, electrochemistry, and stereochemistry. Delivered under the George Fisher Baker Non-Resident Lectureship in Chemistry.

Commercial Organic Analysis, by Allen, 869 pages, P. Blackiston's Son & Co., Philadelphia, Pa., $7.50 per volume.

This is the fifth edition which has been arranged in seven volumes dealing with and altogether forming a complete treatise on the properties, modes of analysis, and proximate analytical examination of the various organic chemicals and products used commercially.

Labor Management, by J. D. Hackett, 681 pages, D. Appleton & Co., New York, $5.00 net.

A study of current practice in personnel administration, examining and explaining the technique of labor management and its application to present-day conditions, as a means of securing greater production.

Reference Book of Inorganic Chemistry, by Wendell M. Latimer and Joel H. Hildebrand, 442 pages, The MacMillan Co., New York, $3.75 net.

A brief presentation of the essential facts of inorganic chemistry for the student's use as a reference book rather than as a textbook.

Reports of the Progress of Applied Chemistry, 759 pages, Society of Chemical Industry, London, England.

This collection of the annual reports for 1928 deals with practically every branch of applied chemistry and is the composite work of a group of distinguished British chemists and engineers.

Artificial Silk, by Dr. O. Faust, 184 pages, Isaac Pitman & Sons, New York, $3.00 net.

A translation from the German dealing with the manufacture of artificial silk, from the making of the raw material to the finishing and after treatment of the final product.

The Fundamentals of Chemical Thermodynamics, by J. A. V. Butler, 207 pages, MacMillan & Co., New York, $2.00 net.

An introduction to the subject of chemical thermodynamics in which particular attention is given to application.

Cost Accounting, by James W. Baker, 139 pages, Southwestern Publishing Co., Cincinnati, Ohio, $.80 net.

The revised edition of this treatise on the principles of cost accounting applied by modern bookkeepers and accountants.

Introduction to Agricultural Economics, by Fred R. Yoder, 472 pages, Thomas Y. Crowell Co., New York, $3.00 net.

A systematic exposition of the farmer's economic problems and of the economic factors in rural social life.

Railway Electrification and Traffic Problems, by Philip Burt, 197 pages, Isaac Pitman & Sons, New York, $3.00 net.

A traffic manager points out the new problems arising out of the electrification of the railroads.

General Science, by W. Dean Pulvermacher and Charles H. Vosburgh, 125 pages, Globe Book Co., New York, $.50 net.

A review textbook for younger students of general science.

"NOW IT CAN BE TOLD"

August Merz' Story of the Pre-War Dye Industry

As Told to Williams Haynes

No deadly check-list of dates and dyes and dollars this; but a human interest account of some of the struggles of the men and their companies who before the World War formed the tiny, militant nucleus from which has sprung what has come, during the past decade, to be one of the more important sections of the American chemical industry.

THROUGHOUT the war-period it was our regular weekly duty to record in the news columns of DRUG AND CHEMICAL MARKETS the establishment of some new corporation or other organization to manufacture dyes. To say nothing of the plumbers, the cloak-and-suit salesmen, the banker's clerks, and the promising young attorneys who rushed to the rescue of our color-starved textile industries, there was hardly a single energetic agent for foreign dyestuffs or an optimistic chemist with any coal-tar experience who did not embark gaily in this sort of venture. Yet throughout the whole of the duration of the war the old firm of Heller & Merz, which in 1914 was second only to the Schoellkopf's among the seven pre-war American dye manufacturers, kept steadfastly to their old line. They increased their output; but they stoutly refused to expand far beyond their traditional field of paper and leather colors. With plant, personnel, and invaluable practical experiences, that Eugene and August Merz withstood what must have been a terrible commercial temptation was one of the puzzling mysteries of the time.

And since the war, during the deflation that culminated in the sorrowful year of 1920, and throughout the long seasons of textile dullness and wicked competition for such dye business as has been, I have wondered sometimes, as we have chronicled in these pages the dissolutions, the plant auctions, the mergers among those dye-makers, whether or not, the Messrs. Merz regretted not having expanded; whether they did not think wistfully sometimes of the great profits they forewent; whether they might not well be a bit envious of the high financing that made a dozen millionaires among the dye men who capitalized their business during the heydays of wartime for combination purposes.

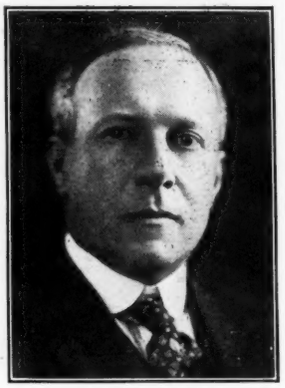
This was, therefore, the first-and-only-direct question that I asked August Merz. He smiled and shook his head.

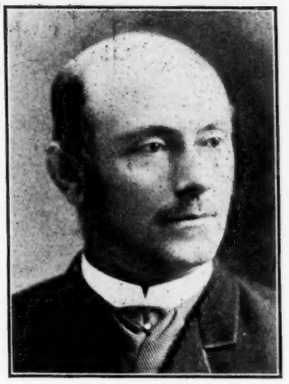
"Curiously," he said, "J. R. M. Klotz answered your question when he said to me quite recently that during the war he considered that my brother and I were the prize pair of idiots in the chemical industries; but that now he believed we were the wisest of all, since Heller & Merz have truly expanded their natural business without having our factory land covered with costly useless brick and mortar or our balance sheet loaded with watered assets.

"Possibly Mr. Klotz is right. We are naturally inclined to agree with him. Probably it is even yet too soon for us to know with full certainty the wisdom or folly of our policy.

"Wise or foolish, however, it arose first from a mistake in judgment," he went on smiling again, "and was continued just because of that very experience we were then criticized for not capitalizing. We did not believe the war would last long. At the first it seemed that we had guessed correctly, and when we finally were convinced that the struggle would be long drawn out, we believed the foreign dyes would come back strong in our markets. We underestimated the progress which has enabled our industry so splendidly to supply American demands, and our long past experience made us distrustful of securing adequate protection in the tariff from Congress. Our firm had too often been so sorely pressed by tariff tinkering that we were 'burned children.' As it has turned out our logic was at fault; but I am inclined to think the results will continue to justify our policy.

"As a matter of fact, competitive conditions are not unlike they have always been—a too-keen and not too-scrupulous battle for orders. Before the war, for example, we imported considerable quantities of malachite green—50 casks at a time, several times a year—and one day the American agent of one of the





These three personalities are outstanding in the development of The Heller and Merz Co. They are (left) Henry Merz (1833-1905), (right) Frederick Heller, (1835-1839), and (center) August Merz who tells this story.

big German dye firms persuaded us to buy through him at the same price, holding forth as inducements that he would no longer solicit our customers and that we should be able to draw from his stock and so reduce the quantity we should have to buy at one time. Very shortly afterwards one of our salesmen reported that we had lost a good customer to this agent on the grounds that we were handling his malachite second hand. We protested and were assured that there must be some mistake; but the 'mistake' happened again, and in spite of our warning, then again. We went back to direct importing. As a modern instance, we are continually importuned to buy a certain intermediate, used in one of our important leather dyes, by an intermediate manufacturer who also makes this same dye. He pretends not to see how or why we cannot buy from a competitor.

"These two facts seem to me to be perfectly plain:

"First, from the very nature of dye-making, no single manufacturer is able, nor ever will be able, to make a full and complete line of dyes, each item of superior quality and at the least cost.

"Second, so long as there are even two dye manufacturers, no one of them will be able to sell every single dye consumer.

"Granting these axioms, there always has been, is now, and forever will be an interchange of colors among dye manufacturers. Why cannot we all understand this? Why cannot we see that nobody can sell the same keg of dye twice to both a competitor and a consumer? Why do we not honestly sanction and carefully protect this kind of business?

Selling a Competitor's Dye

"Way back in 1909 we had a splendidly ridiculous sample of this sort of silly competition. At that time we were importing rhodamine from Germany and manufacturing our own Orange II both of which we sold on contract to a large roofing paper manufacturer. The Badische people convinced this buyer that German dyes were far superior to our pitiful American products, and they got the contract away from us. But they delivered German rhodamine and Heller & Merz orange, since that dye was selling at the cheap price of 12½ cents a pound and they bought from us rather than pay duty and ocean freight. Weber & Field would say such nonsensical nonsense—" and Mr. Merz broke off laughing and leaving me to bring his thoughts to their own logical conclusion.

The Dye Industry's Pioneers

"About a year ago I did a lot of historical research on the early days of the American dye industry when I was writing an article for Howard Neiman's 50th Anniversary issue of 'The Textile Colorist.' The records are scanty and incomplete, and the historians do not always agree. Victor Bloede, who was himself a pioneer not only in the glues and textile sizes he still makes, but also in bromine on the Ohio River and in dyes at Parkersburg, West Virginia, pays homage, as the first American dye manufacturer to one August Partz and to Gowanus Creek, in Brooklyn, N. Y. as the birthplace of the industry. England claims like honors for Thomas Holliday who is said to have made magenta in 1864 also in Brooklyn and Ellwood Hendrick, with filial pride, for his father was one of the backers of the enterprise, puts forward the old Albany Aniline and Chemical Company as the true pioneer. Even if the claim is not so strong James Hendrick was one of the real cornerstones of the industry. A wealthy man, he sent his son to Germany to study dye manufacturing and like J. F. Schoellkopf, who so long and so generously backed his own sons, J. F., Jr. and Hugo, he became keenly interested in the establishment of a coal-tar dye industry. It took courage and faith, in those days, to persist in this chemical field, and the industry to-day owes a real debt to these real fathers. William Zinnser (who exhibited salicylic acid at the Centennial Exposition in Philadelphia in 1876) and the elder Rosengarten were fathers of this same type, and I suppose without too great a display of pariality, I may include my own father in this distinguished group.

"My father always hoped to embark in some manufacturing enterprise, but engaging in the color business was the suggestion of Frederick Heller, my mother's brother. He was a mechanical genius who went out to the second Californian gold rush. Equipped with an Encyclopedia Britannica he tackled any problem which presented itself. From

this storehouse he drew plans for the building and equipping of a brewery, and though he dug no gold still he returned East in 1866 with $16,000 which he had made as an assayer of gold ores.

From Photography to Dyes

"After the Civil War, my father whose training was purely mercantile, had sort of drifted from one business to another finally operating a photographic studio. He studied chemistry at Cooper Union in order better to understand the making of wet plates. He disliked the business extremely, but it flourished exceedingly. The German reservists, called back for the Austro-Prussian war flocked to the studio in order to leave their photographs with their families. Their brief campaign over, they came back again in their fine uniforms to get a memento of their short military careers. This double-barrelled trade gave my father a little surplus of ready cash, and when his brother-in-law came back from the Golden West, they decided to pool their capital and embark in the first likely manufacturing industry that presented itself, under the firm name of Heller & Merz. A salesman, so the family tradition goes, told my uncle about a wonderful blue pigment made out of cheap raw materials and selling for a good price. Here was the sought for opportunity. The blue pigment was ultramarine.

"The partners began their first chemical researches in the cellar of my father's residence. Soon my uncle went back to Germany to pick up any knowledge he could. Near his old home town was by happy chance a little ultramarine plant. But his snooping was vigorously protested. He was ordered off. Possibly the dog was sicced on him. However, he was able to pick up sone information from his friends among the workmen—at least he learned the ingredients and a sketchy idea of the process, which they worked out in the cellar to a point where at least they produced a blue-tinged substance. They bought some real data from a man who had built an ultramarine plant in England, imported a German foreman, and launched out for themselves in a rented building in River Street, Newark where the Pennsylvania freight now stands.

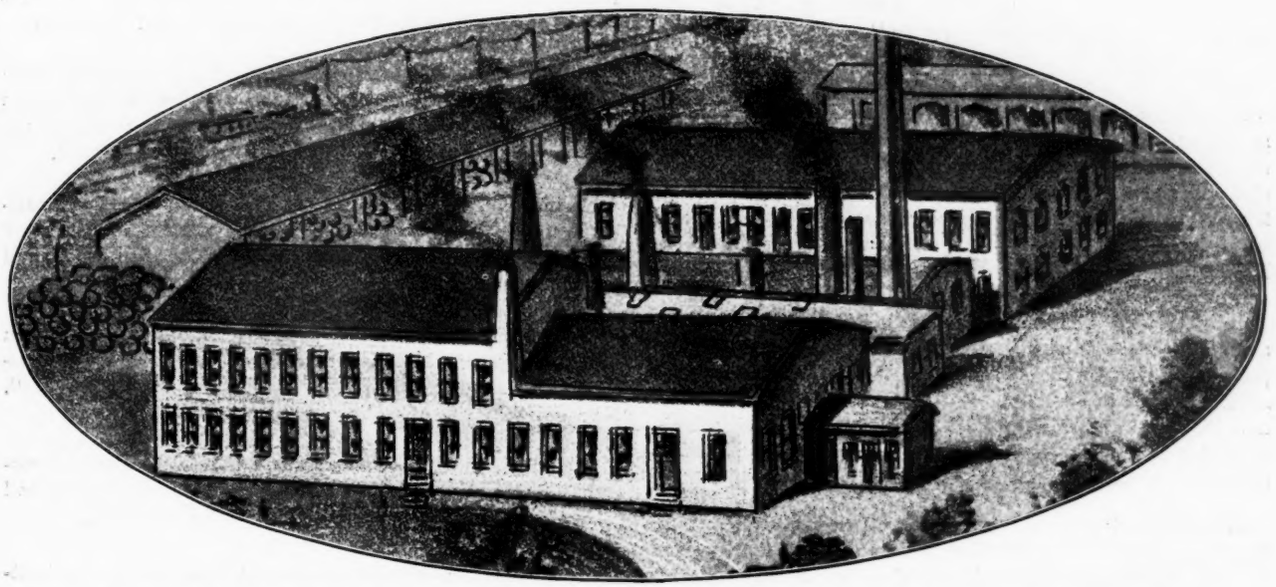
"For a second time, the young partners were 'all dressed up with no place to go,' for having at last set up as manufacturers they now had no customers. And small prospect of getting them, since the men in charge of the paper mills and calico print shops—their best prospects—were Scotch and English, who saw no reason to switch their source of supply, and with admirably stubborn loyalty stuck to the imported colors.

"A second time war played a part in the destinies of our firm. For the threat of a French blockade of Germany (during the Franco-Prussian war) sent consumers of ultramarine scurrying to try our domestic product. It proved satisfactory. The price was right. The day was saved, for they continued to buy from us.

The Ultramarine Battle

"After this early crisis passed things went smoothly for a while—too smoothly for the success brought competition. A German rival built a plant at Whitestone, Long Island, and shortly afterwards, an Ultramarine Syndicate having been organized in Germany, the trust formed an American subsidiary, the International Ultramarine Company, with a factory down on Staten Island.

"As the moving picture titles put it 'Then came grim war,' and that battle for the ultramarine market of this country was waged with all best commercial tactics—fair and foul—of those days when competition was quite uncontrolled, when business ethics were in a state of crude barbarism, and when every-



View of the Heller & Merz plant in 1878 during the swash-buckling days of the ultramarine battle and just before the company began the manufacture of aniline dyes.

body considered any competitor a natural born villain. In the end an agreement of the general character of a pool was entered into between the International group and ourselves. It was a truce pact which would, I don't doubt, be quite illegal to-day—in fact, during a tariff hearing in the nineties, I believe at that time the Wilson-Gorman bill was being drafted, some Senator began asking my father, who was a witness, some very searching questions. He replied boldly that he was proud of the fact that he had instigated such an arrangement of prices and markets because it had saved the industry and he added, 'Self-preservation is as much a first law of economics as of nature.'

Beginning Aniline Manufacture

"It was during the days of swash buckling competition that we made our initial dip into aniline dyes, done in order to broaden our business base. Our first venture was as importing agents for the Swiss house of Monnet, and we did their American selling for some years till a law suit arising out of a customs decision in which they refused to back us as their agents broke up our connection and started us out in manufacturing about 1881.

"As manufacturers, however, we have always been specialists. Why make a dye if there are already four or five makers so that there is ample supply and plenty of competition? Why project ourselves as a new and disturbing factor into a limited and complicated market situation? That has been a fundamental policy of ours. We have bought any needed dyes we could. We have only manufactured what we felt was positively needed. This has not been a theory: it has been our practice. If the whole American dye industry had built itself up on this foundation, rather than everybody striving, valiantly and most expensively to produce 'a full line,' I am confident we should have shown even a greater progress and pretty obviously we should all of us have been able to show greater profits."

Argentine's annual production of chemicals is approximately as follows: Sulfuric acid 8,000 tons; muriatic acid 1,000 tons; nitric acid 75 tons; carbon bisulfide 1,800 tons; a small amount of borax and Paris green. The national government produces 55° Be sulfuric acid by the chamber process in its own plant, which has a daily capacity of 60 metric tons, according to the Department of Commerce.

Consolidating Mining and Smelting Co. of Canada, Ltd., in its annual report, intimates that experiments made last year on prairie farms in the use of triple superphosphate from the Trail smelter proved satisfactory. With the completion of the first unit of the contact sulfuric acid plant, production on a commercial scale of acid phosphate will be begun. Consideration has been given to the production of sulfate of ammonia.

U. S. Army air corps announces that ethylene glycol has been found to be the most satisfactory substance for cooling airplane motors. Engines cooled by ethylene glycol are several per cent. more efficient than water-cooled motors, according to the Army corps.

Science and Sales

Increased yields of cobalt carbonyl are obtained in the process of making this compound from cobalt and carbon monoxide, by excluding oxidizing agents during the preparation of the metal and by passing the carbon monoxide over a catalyst of an oxide of manganese or copper or a mixture of these oxides to remove free oxygen. British Patent No. 307,112.

A method of treating sulfite waste liquor consists first in subjecting it to the action of porous calcium carbonate and to a mixture, consisting of either calcium sulfate, slaked lime and ferrous sulfate, or "solid waste" from alkali plant, calcium sulfate, slaked lime and ferrous sulfate. United States Patent No. 1,699,258.

Chlorine compounds are used for chlorinating iron ores, the latter being mixed with ammonium chloride with or without calcium or magnesium chloride and chlorinated in a current of hydrochloric acid gas, pure ferric chloride being obtained by fractional sublimation. British Patent No. 297,097.

A colloidal absorption product of hydrochloric acid is made by first preparing an infusion of agar-agar in hot water and then adding the acid as well as kieselguhr or purified siliecous earth containing tricalcium phosfate to give a stiff paste. United States Patent No. 1,699,596.

A rubber mucilage consists of a solution of rubber in a chlorinated hydrocarbon, perfume, and a sufficient amount of a saturated solution of an inorganic or an organic salt, such as aluminum sulfate or sodium propylnaphthylsulfonate, to increase the viscosity. British Patent No. 306,864.

Cellulose acetate is used in proportions of one to five per cent. to make mixtures of perfumes, medicaments or disinfectants before these mixtures are added to soaps, with the result that vaporization of the volatile perfumes and the like is impeded. German Patent No. 464,638.

An interesting method of chromium plating for which various claims are made consists in the addition of silicic acid in the freshly made condition to the solution of chromic acid which is thereafter electrolyzed. United States Patent No. 1,705,954.

Calcium carbide and sodium are used for breaking up crude petroleum emulsions, for example, cut oil emulsions, bottom settlings and the like, the oil being agitated with the chemicals and allowed to settle. United States Patent No. 1,700,627.

Commercial alcohol is used for the production of an anti-knock fuel by heating commercial gasoline in a retort with 4 to 7 per cent of the alcohol at a temperature of 65 degrees C. United States Patent No. 1,699,355.

An interesting method of producing sulfuretted hydrogen consists in passing hydrogen through molten sulfur under pressure with thorough agitation. United States Patent No. 1,700,578.

A mixture, which is claimed to be an efficient paint and varnish, consists of cresylic acid, sulfuric acid, butyl alcohol and tetrachloroethane. United States Patent No. 1,700,491.

Crude heptaldehyde may be obtained from castor oil by heating the latter in a nichrome tube. United States Patent No. 1,697,377.

MERGERS Pro and Con

That the chemical industry has gone "merger-minded" is as indisputable as it was inevitable. Realizing the tremendous interest surrounding the entire subject of mergers and their effect on the industry, CHEMICAL MARKETS has secured the accompanying statements from various chemical executives, outlining their thoughts on this widely-discussed topic.

TO MAKE it possible for the industries of the United States to compete in the world markets, increasing economies in production costs are vital," writes the president of one large company which recently announced the consolidation of its interests with an even larger organization. "With the settlement of the European financial situation, especially with reference to Germany, American industry will find itself face to face with the keenest sort of world competition. Export associations are of no particular outstanding assistance in meeting this condition—what is needed is greatest economy in manufacturing and distribution. This can only come from basicly sound conditions within the industry, the supply of raw materials at the lowest possible cost, plants located with reference to geographical advantages, and the most efficient apparatus and skilled operators.

"The prosperity of America depends chiefly upon the purchasing power of our citizens. Rates of labor therefore must be maintained, and these high labor rates—compared with the rates of to-day in Europe and other foreign countries—must be offset by economies to be realized in other directions.

"A protective tariff is essential to the prosperity of America, as has been freely stated by the leaders of both political parties. All the conditions of competition should be taken into account in fixing a rate of tariff. An excessively high tariff is of no real economic benefit to the country; at the same time, a tariff which adequately protects labor and capital is essential to the progress of our country.

Economic Benefits of the Merger

"Mergers in an industry which are logical and which result in economies, greater efficiency and lower costs, are bound to result to the advantage of all concerned, including the ultimate consumer. Distribution of merchandise and the accumulation of raw materials can be accomplished on an economic basis, through elimination of waste, transportation costs, and the elimination of other uneconomic situations.

"Research is essential to the country's future prosperity, and the amount which can be spent on research of course depends on the size of the business.

"Merger of companies or plants is only economic when the result is a saving from more efficient operation. Mere size in any institution is not a guarantee of economies."

Elvin H. Killheffer

"All of the present mergers taking place in the chemical business are simply a recognition of something that has obviously been necessary for a long time," is the reaction of Elvin H. Killheffer, president, Newport Chemical Works, Inc. "With the getting together into large powerful units of the various foreign chemical manufacturers it is foolish to suppose that American chemical manufacture could be carried on in comparatively small units. Especially is this true in view of the great differences in the same quality of labor here and in Europe.

"In my opinion we have by no means seen the end of the mergers here and if the mergers that have taken place and that are still to take place serve the purpose for which they are made, that is to say, effect economies throughout the organization and at the same time give the companies concerned a greater diversification as to product, the result should be entirely beneficial both to the producing companies and to the industries that they serve. If the two prime purposes, namely, economies and diversification are properly realized, then I would say that the chemical industry should be in a much stronger position ten or twenty years from now than it otherwise would be, and so long as the purposes in view are other than the formation of monopolies, I cannot see why there should be unfavorable comment or criticism in Washington or anywhere else."

Mergers as Public Benefactors

The president of an old-established independent company thinks that, "Mergers must play an important part in our economic development if we are to give the public at large the things that go towards making life easier and happier. This can only be achieved by permitting the public to participate in the savings and economies that come through consolidations. The mergers that will follow this policy and program will win out and really become public benefactors. On the other hand such consolidations that are so short-sighted as to abuse their power and are unmindful of public interest will crumble of their own iniquity. I think the general trend of thought by long odds is in the direction of the constructive side."

Rolland H. French

Rolland H. French, president, Chemical Solvents, writes that, "chemical mergers are a good thing within reasonable limits.

"I do not think the idea of the combination resulting in the spread of the field is sound unless an agreement can be reached concerning geographic territorial distribution.

"These consolidations may mean a gradual elimination of chemical competition. Consolidations will mean that the whole industry in ten to twenty years from now should, if properly handled, be on a much sounder basis making the bid for business depend on scientific development and service rather than on price.

"The combination idea will attract unfavorable attention at Washington if too much stress is laid on price control and too much effort is made to prevent new organizations from forming. In my opinion this is one of the greatest dangers and should receive control from Washington."

Alex C. Fergusson

Alex C. Fergusson, Jr., owner, Alex C. Fergusson Co., has the opinion that, "broadly speaking, and within limits, the present epidemic of chemical mergers will work to the final benefit of the chemical producers and consumers.

"Research and development work will certainly increase and prices ultimately will be profitably lower. Obviously it can never reach the stage wished for by Henry Ford in the public utility field, and therefore, competition will always exist among the larger interests.

"The small units have in the past, and always will, get along somehow. The chemical dealers, like the other proverbial poor, also are always with us, and certainly would be encouraged rather than starved to death by the big fellows as a profitable policy.

"Tho' the 'big stick' may have felt as if it were made of latex lately, in some directions, nevertheless Uncle Sam has a fairly good technical staff and equipment. Who of us can tell when a vulcanizing plant may be set in operation and the old 'club,' if somebody 'gets gay,' be found to look like latex but feel like lignum-vitae. Therefore, let the mergers continue to merge for the World is a large place and my motto has always been: 'Get the orders.' "

Charles B. Hall

"All the chemical mergers that I know of have improved their individual conditions," writes Charles B. Hall, sales manager, chemical department, Cleveland-Cliffs Iron Co.

"Money is the answer.

"The keynote of a merger is to absorb the fellow who uses the same kind of chemicals, to secure an outlet for his surplus which gives the new principals 100 per cent production, volume, reduces cost, thereby making a profit.

"Mergers do not mean a monopoly. They have plenty of competition but with their improved condition, the consumer is benefited by a possible reduction in the cost of his supplies and surely he has the assurance of stabilized prices. Read the definition of 'merger' in the dictionary and you will not be disturbed about what the authorities in Washington might do. Radical changes take place in the chemical world every eight to ten years so why worry about the future now ?"

Chemical Industry Increases in Importance on Pacific Coast

Growing importance of chemical industry on the Pacific coast and its recent expansion and progress have been called to the attention of the Pacific Coast Transportation Advisory Board in the report of O. W. Tuckwood, American Potash & Chemical Corp., reprinted in the "Wall St. Journal." The report states that many western chemical companies which started operations with a single product have gradually added related chemicals to their production lists, and western competition is causing somewhat discordant note in the chemical markets.

During the past two or three years the fertilizer business in California has increased approximately 15% each year with much larger increase than that in southern part of the state, Tuckwood declared. One of the economic factors affecting the fertilizer industry was the setback caused by frosts last spring which will curtail farmers' fertilizer purchases to some extent.

California last year produced 90,000 tons of potash fertilizer materials, representing practically the entire American production. Imports of this product from Europe amounted to 800,000 tons in 1928. The Pacific Coast also produced practically all of the 200,000 tons of natural sodium compounds—not including common salt—which was produced in the United States in 1928. This branch of the chemical industry is rapidly increasing in potency and volume and will soon have commanding position, it is predicted.

Electrical conversion of some 25 per cent. methane, present in coke oven gas, to acetylene was announced as a possibility at a scientific meeting held January 29, 1929, at the Coal Research Institute of Muehlheim on the Ruhr. This constituent of coke oven gas still awaits better utilization. Because of the high proportion of methane in coke oven gas combined with the large production of the latter, methane apparently has a potential economic value which justifies extensive research.

Sweden supplies 40 per cent. of the world's cellulose consumption, according to statistics just published in Stockholm. Present output of newsprint amounts to 6,600,000 tons annually. Fears of overproduction in pulp and paper are expressed chiefly due to the rapid growth of the Canadian industry, which increased by 15.5 per cent during the first eight months of 1928.

Rayon producing circles of England are said to be anxiously awaiting the fulfillment of domestic production plans of acetone by Imperial Chemical Industries and the Distillers Co. as acetone is now selling for 30 per cent. more than last year.

Para-phenetidine and potassium ethyl-xanthogenate have been exempted from Key Industry duty in Britain from March 4 to December 31, 1929.

How the Chemical Industry Fights
INDUSTRIAL POISONS

By G. H. Gehrmann, M. D.
Medical Director, E. I. du Pont de Nemours & Co.

COMPARATIVELY recent expansion of the chemical industry has been responsible for the introduction of many new methods of manufacture, and the development of numerous new products. This increase of newer methods and improved products has been made possible, largely as the results of chemical research and applied chemistry. There has long since been a realization of the importance that chemistry bears toward the development of industry and although chemistry has produced many products which in the course of manufacture are highly toxic, it has at the same time developed methods whereby these same materials can be made and the element of toxic absorption practically eliminated.

Health hazard control is of extreme importance within the chemical industry and Dr. Gehrmann tells here how improved practice for the control of toxic absorption has kept pace with other branches of the industry's progress.

Along with this development of industrial progress, has come a more thorough knowledge of existing health hazards, and a realization that every effort must be made to preserve the health of industrial workers. The importance of mechanical equipment has been realized for years, and unlimited efforts devoted towards maintaining its efficiency and preventing any interference with normal production. For many years, human equipment received very little consideration and replacements due to physical breaks caused directly by working conditions were enormous. Fortunately, these conditions are now beginning to show changes in the right direction and industrial medicine has developed to the point where it has become a recognized unit within the chemical industry.

Control of industrial poisoning is divided into two groups of handling; prevention and cure. Preventive measures are always more successful than curative, and have the further advantage, when scientifically devised and correctly maintained, of eliminating the latter except in the event of accidental circumstances. Just as there will always be some accidents in spite of the most rigid safety measures, so there will be occasional cases of industrial poisoning.

The formulation of successful control measures is dependent upon, first of all, a complete understanding of the manner in which the human organism is being affected and the route or routes by which toxic material is being absorbed into the body.

There are three main routes of entrance, namely the gastro intestinal tract, the respiratory tract and the skin, any one or all of which may be the mode of entrance in any given case. Many of us know that certain chemicals enter the body by one particular route and fail to realize the existence of more remote but still definite hazards that exist along other lines. For example, metallic mercury is definitely classed as a poison if taken by mouth, and yet it has been demonstrated that metallic mercury will volatilize at ordinary temperature, sufficiently to produce symptoms of mercury poisoning by the inhalation of the vapors.

Skin absorption of lead has always been considered to be of no great importance in lead intoxication and yet tetraethyl lead will be absorbed through the skin very rapidly and in dangerous amounts.

Thus it is always necessary to establish the chemical facts in order to start with a reasonable degree of intelligence. Such information as general nature of material, solubility, volatility, density, and changes that may be expected by methods of handling such as increased temperature and pressure. In considering fumes or gases it is essential to know whether they are heavier or lighter than air, otherwise adequate ventilation cannot be installed. An understanding of the chemical facts, cannot help but be of real value not only in the study and planning of preventive measures but also in helping to determine the pathological changes in the human body.

Next it becomes necessary to make a most careful and exhaustive study, to determine just what the

effects are upon the health of workers exposed, this being obviously necessary in order to know what symptoms to look for at the time of the periodic examinations that serve as an indicator of the success or failure of the methods of prevention that are being enforced. What are the modes of entrance to the body; skin, lungs, or intestinal tract, and is entrance by one or more routes ?

Development of Preventative Methods

Now, having arrived at the point where we have a thorough understanding of the chemistry of the material in question, the method of entrance into the human body, and the effects it produces as indicated by symptoms and clinical findings, the necessary foundation has been laid for the development of preventive measures. A conference of the medical department, the chemical department and the management will bring out the facts of the situation and a definite program of procedure can be decided upon. With chemical engineering rests the task of devising newer and safer methods of production and with the medical department the careful supervision of the health of the workers. Thus far the entire work has been dependent upon the chemical and medical departments, but with the final enforcement of control methods, there must come co-operation from the worker himself, every foreman and supervisor, and the safety department. It is useless to provide a man with a respirator, special clothing or pair of gloves and tell him to wear them to protect himself, and then fail to follow him up almost constantly. The average workman seems to take delight in defying the very regulations that have been developed for his own protection. Many seem to feel that their physical make-up is strong enough to withstand the ravages of disease and poisons without the aid of protection.

Safeguarding the Individual

Suppose we start with a worker at the employment department. Here he is informed of the nature of the work, of the dangers that exist, and is informed that in order to protect himself, it will be necessary for him carefully to follow all the rules that have been developed for this particular work. This gives him the opportunity of deciding whether or not he will take up an occupation that may lead to impaired health. After having heard the story at the employment department, and decided that he wants the job, he is conducted to the medical department where he is given a careful physical examination. This examination must be very careful and most complete in order to get an accurate picture of the applicant's physical condition and in order to eliminate those men who cannot safely work under certain conditions. This physical examination must further serve as a check for future examinations, in order to detect the presence of beginning signs of absorption of toxic material. Blood pressure, blood findings, and complete urine analysis should be done as a routine on every case. After passing the physical examination, the applicant is personally conducted to his work and there carefully instructed as to the manner of doing the work and the rules that he *must* observe in order to protect his health. From this point on he must be watched and supervised carefully, otherwise the rules and regulations will be discarded one by one. A periodic physical examination should be made in order to detect the appearance of any symptoms which might indicate absorption of toxic material. The frequency of these examinations should depend upon the toxicity of the material that is being handled and the speed with which it may act upon the body.

Chilean Nitrate Buying Agency Established In Netherlands

A separate agency has been established in the Netherlands for the primary purpose of purchasing Chilean nitrate of soda on behalf of member co-operative societies, and with larger future plans involving proposals for a joint working arrangement among organizations in other European countries. This agency, which is known as the Internationale Co-operatieve Landbouwaankoopvereeniging (International Co-operative Agricultural Purchasing Association) is associated with the Co-operatieve Aankoopvereeniging Central Bureau it het Nederlandsche Landbouw Comite (Co-operative Purchasing Association Central Bureau of the Netherland Agricultural Committee), and both have their offices at Rotterdam.

The Central Bureau, as the latter or original organization is briefly termed, is the largest central purchasing agency for co-operative societies in the Netherlands, and its membership is made up of over 780 societies representing around 70,000 agriculturalists. Total turnover during the first half of 1928 amounted to 34,984,990 florins, of which 19,902,832 florins was made up of fertilizers and 15,082,158 florins of feedingstuffs. Over this same period total purchases of Chilean nitrate of soda from the Central Bureau amounted to 86,459 tons. In addition to activities among its own direct members the Bureau is considered to work in concert with another co-operative agricultural purchasing agency in the country, reports Assistant Commercial Attache Paul S. Guinn, The Hague.

Germany provided 300,000 tons, or 60 per cent. of Japanese imports of ammonium sulfate, during 1926, the United States taking second place with 20 per cent. of the total, and Great Britain third, with 13 per cent. In 1927 the relation changed in favour of Great Britain, the German imports having declined to 81,673 tons, according to German statistics. Japanese production of ammonium sulfate is developing steadily. In 1927 it amounted to 180,000 tons, which was 34,000 tons more than during the preceding year. The total consumption is estimated at 500,000 tons. The future of the Japanese market for ammonium sulfate is influenced by the erection of large plants by the Japan Nitrogen Co., in Chosen, equipped for an annual production of 250,000 tons. These plants (like others in Japan) will work the Casale process. All the new plants, operating at capacity, could supply the total Japanese consumption.

German Potash Syndicate's May deliveries amounted to 77,326 metric tons of pure potash as compared with 63,766 metric tons in May, 1928. For the first five months of the current year total deliveries amounted to 732,171 metric tons of pure-potash against 703,150 metric tons for January-May, 1928. These figures include material shipped from the potash mines to the export warehouses of the Syndicate.

Broadening Markets For LACTIC ACID

LAST year was the first which witnessed any real decrease in imports of lactic acid containing less than 55 per cent acid content. But the import curve on these grades of the acid has been constantly downward since 1922. Since that time, aided to some extent by the Fordney-McCumber Act, domestic producers have gradually established themselves firmly in this market, with a consequent and constant decrease in the imports of lactic acid. During that period, but two exceptions to this downward trend are noted when 489,950 pounds were imported in 1925, and 624,949 pounds in 1926. Both these figures are considerably higher than the 380,840 pounds imported in 1922, the year of the changed tariff. But in 1927 and especially in 1928, the import figures fell off considerably to 281,018 pounds in the former year and finally to only 84,672 pounds in the latter. This apparently indicates the final relegation of imported material to a secondary place in the domestic market, for imports for the first four months of this year total only 25,311 pounds.

Lactic Acid Imports

Pounds

	Less than 55 Per Cent	More than 55 Per Cent
1922....	380,840	5,000
1923....	118,289	66,648
1924....	203,564	90,110
1925....	489,950	130,855
1926....	624,949	194,504
1927....	281,018	202,352
1928....	84,672	282,598

The situation as regards the more highly concentrated grades of this acid, which includes all grades containing more than 55 per cent acid content, is diametrically opposite to that of the lower strength grades. In the case of the concentrated material, the imports have increased steadily since 1922, when they only amounted to 5,000 pounds, until they reached the record figure of 282,598 pounds in 1928. That the increase continues into the present year is indicated by the fact that 81,849 pounds were imported during the first four months of 1929. In the field of the concentrated material, imported lactic acid dominates the market and supplies practically the entire demand of this country. Domestic manufactures have made and are making some efforts to break into the market for the concentrated acid in the same fashion in which they succeeded in establishing themselves in the market for the technical grades, but thus far they have been unsuccessful in establishing production upon a commercial basis.

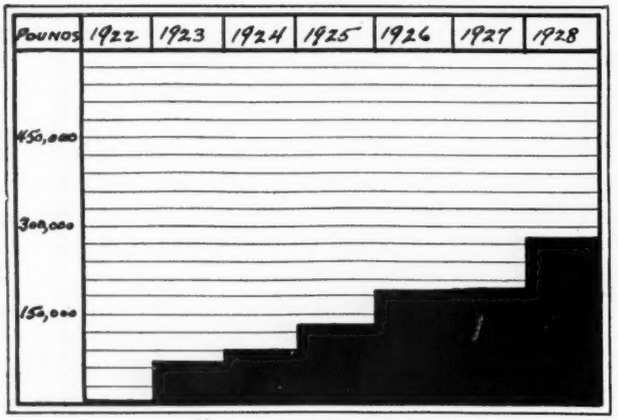
The growing imports of the concentrated grades and the remarkable way in which imports of the lower grades were maintained until last year is indicative of the constantly broadening uses for lactic acid. It has gradually found its way into various industries after many years of research made by different manufacturers in an effort to put this commodity to use. It is now used on a large scale in the tanning of leather, in the textile mills as a mordant for carrying colors into print cloth, and in the silk industry for "scrooping." Lactic acid is a valuable ingredient in the production of antimony lactate, ethyl lactate, calcium lactate and sodium lactate.

The leather industry is the most important consumer of technical lactic acid and, in the United States, consumes about 90 per cent of the technical lactic acid marketed. Writing of this use in "The Chemical Trade Journal and Chemical Engineer," of London, "Omega" says that "lactic acid is used, together with acetic acid, in the bateing of limed hides and in the liquors of the tan-pits and "ly-aways" where it assists in the absorption of tannin by its "plumping action" on the hides. It is used as a substitute for the bran drench—the fermented mixture that serves to remove lime from the dehaired hides and skins. In experiments to determine the "plumping" effect of various acids, as regards weight and strength of the leather produced, lactic acid has been found to have a marked superiority at about 4 per cent. In a series of experiments, the increased weight and strength of the finished leather was for lactic acid, 22.8 per cent in weight and 53.4 per cent in strength. Its nearest rivals were oxalic acid with an increase of 13.2 per cent in weight and 39.1 per cent in strength; and acetic acid with and increase of 10.8 per cent in weight and 36.7 per cent in strength.

"Over plumping" is more likely to occur with inorganic acids than with organic acids, so that lactic acid appears to be specially indicated as a plumping agent despite its somewhat higher cost. Lactic acid has now come into general use in deliming hides and in practice is not more expensive than dung or bran. It may, in many cases, be substituted for the bran drench and is certainly more rapid and less dangerous in warm weather. Its value in the chrome tanning

of skins is due to its ability to keep calcium salts in solution and thus prevent the formation of white deposits. The absorption of tannin in leather manufacture can be accelerated by treating the hide before putting them in the suspenders, with a solution of lactic acid.

"In the textile industry, lactic acid and the lactates are used by the wool dyer as assistants in mordanting



Imports of lactic acid of over 55 per cent acid content have increased steadily since 1922.

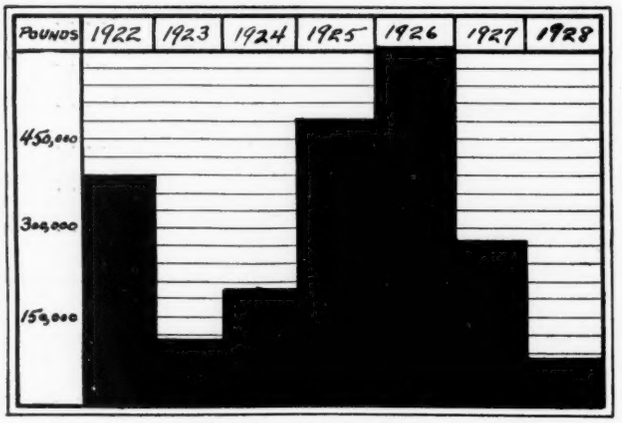
with bichromate of potash. Compared with tartaric and oxalic acids, lactic acid possesses greater reducing powers, greater solubility of itself and its salts, lower corrosive action, nontoxicity and nonvolatility. Lactic acid penetrates and wets both animal and vegetable fibres and imparts to the fabric a desirable and soft feel. Trials have shown lactic acid to be particularly suitable for printing on wool, but with sulfonic acids, lactic acid by itself has been found to be too weak. In combination with sulfuric or tartaric acids, however, much better results as regards evenness and depth of shade are obtained, especially with "Brilliant" and "Naphthol Blacks" than when sulfuric acid or tartaric acid alone is used. For most alizarine mordant colors lactic acid is to be preferred for wool chroming to tartaric or oxalic acids. Hoffmann ("Farber Zeit." 7, p. 65) states that with lactic acid more chrome is fixed on the fibre and fuller and brighter shades are obtained both with alizarins and dyewoods and less coloring matter is required. Lactic acid does not tender the fibre.

"The application of lactic acid for dissolving dyestuffs which are insoluble in water has been patented in France. The double lactates of calcium and antimony are used in mordanting cotton, and aniline lactate has been used in producing aniline black on cotton. Owing to their viscosity, lactate solutions penetrate cotton fibre very rapidly. Generally speaking, it can be said that with in recent years, the textile trades have realized more and more the high value of lactic acid.

"Lactic acid has also found some application in the artificial silk industry. It has been found that if acids, organic or inorganic, are left in the thread after the souring bath, the thread becomes brittle and weak, and that lactic acid is least harmful in this respect. In regard to the weakening effect of water on artificial silk, it is proposed to boil the silk with formaldehyde and lactic acid solution and then dry the thread at a raised temperature. Under these conditions, a condensation product is formed in the surface which is resistant to water.

"The rapidly expanding cellulose lacquer industry has brought into prominence, as solvents and plasticizers the organic esters of lactic acid, particularly ethyl lactate. Nitrocellulose solutions in ethyl lactate will stand greater dilution with non-solvents, without losing their solvent power, than most of the solvents in general use. Ethyl lactate remains an active solvent even after 25 per cent of water has been added and the presence of ethyl lactate also minimizes 'blushing' defects in lacquers."

Coming to the edible and U. S. P. grades of the acid, we find them in constantly increasing demand for use in the preparation of medicine, in confectionery, in soft drinks and acid beverages, and in the manufacture of many other foods and beverages. As a bacterial antiseptic in food products, lactic acid is in some cases replacing tartaric and citric acids. In medicine and surgery, lactic acid and its salts are



The lower grades of lactic acid, below 55 per cent, continued to be imported in considerable quantity until 1928, as this chart indicates.

used to wide extent in cases of tuberculosis, diarrhoea, rheumatism, tetany, epilepsy, scurvy and in many other forms of treatment.

Commercial manufacture of sugar from wood is proposed in Germany, according to the Department of Commerce. Subsequent to the establishment in July, 1928, of "Holzhydrolyse A. B.," in Heidelberg, capital 200,000 marks, for wood saccharification (Dr. F. Bergius patents), it is now proposed to erect a plant in Stettin with an estimated capacity of 600 to 700 tons daily. British Distillers Co. of Edinburgh has interested itself in this process and has formed International Sugar and Alcohol, Ltd. After erection of the producing unit in Stettin, it is planned to build other plants in Germany, if necessary financial backing can be obtained.

Sales of the German potash syndicate for the first four months of 1929 totaled 655,000 metric tons as compared with 639,000 metric tons during the similar period of 1928.

MERGERS AND MARKETS IN CANADA

By L. E. Westman,
Editor, "Canadian Chemistry & Metallurgy"

CHEMICAL affairs and developments in Canada are often quite well known to many chemical manufacturers in the United States. It could scarcely be otherwise when so much business is done by American companies and their branch connections in Canada, and when there are so many ex-Canadians associated with American corporations.

At the same time the average Canadian interested in chemical business probably knows a great deal more about the United States than the average American does about Canada. Citizens of countries with relatively small populations are usually better acquainted with their larger neighbors than the latter are with them.

Enough might be written about chemical industries and markets in Canada to occupy considerable space, but a few salient and facts may be sufficient to show similarities and differences between American and Canadian conditions. Broadly, Canada offers very much the same picture as the United States; drawn of course on a much smaller scale and with some divisions of the chemical industry still quite unoccupied.

Chemical Prices

No side ever has all the advantages whether in argument or trade. A buyer of chemicals in Canada usually has quite as low prices submitted to him as he would if he were in the United States. Frequently the Canadian buyer has a distinct advantage.

In general the policy in Canada, while protective in a mild way, admits products used in manufacturing, including chemicals, on a duty free basis. There are many exceptions, particularly those which are produced in Canada, but no such measure of protection is available to specialized Canadian industries as is now in force in the United States. As a direct result certain chemicals may be quoted on the Canadian market somewhat lower than they are in the United States. The difference may be in some instances quite high. Dyestuffs, for example, enter Canada duty free. When European competition in these lines was at its height and when currency was disturbed, dyestuffs could be secured at nominal prices with considerable margin of profit to the importer. American producers, while protected at home, had a difficult market to sell in Canada, and yet it must be said that they maintained their position well. The advantage was with the Canadian buyer and there were no Canadian producers to protect. When an American merchant reads Canadian prices they will have no comparative meaning to him unless he knows world prices and Canadian duties.

This leads directly to the general statement that there is a distinct individuality about Canadian chemical markets which makes them only to a certain limited extent a reflection of American markets. As trade restrictions and duties increase and differ, this tendency may become even more marked.

Import Channels

With the general growth of Canada in business, the tendency for direct importation has been developing. Canada still quite largely imports through the United States, but the tendency is not in this direction. Just as soon as volume reaches a certain point, the advantages of direct importation are immediately apparent.

Vancouver and Montreal are two very natural points of entry, and they will continue to be logical primary bases for chemical importers bringing in

articles from abroad. Toronto perhaps leads as a general centre for the importation of American products, because Ontario and that district surrounding Montreal constitutes the consuming core of the chemical business in Canada. Reference is made here to Vancouver, and Winnipeg also might be included. The population development in Western Canada and the industrial advance that must come with it, makes this Western half of the Dominion of the greatest interest at the present time. There would seem to be no natural reason why population density taking the north half of the continent as a whole, should not swing north of the American boundary at a point in central Western Canada, and continue through the three provinces of Saskatchewan, Alberta and British Columbia. From the standpoint of natural resources and conditions for living which eventually create chemical markets, this section of Canada is endowed quite as favorably as any portion of the western half of the Continent.

The future will probably show even stronger tendencies toward direct importations rather than through American ports, particularly in any lines where volume and tonnage are factors. Price differences accelerate the tendency.

CANADIAN PRODUCTION OF CHEMICALS AND ALLIED PRODUCTS

Coal Tar Products	1927 --	$ 3,796,715
	1928 --	4,115,920
Acids, Alkalies, Salt and Compressed Gases	1927 --	30,740,846
	1928 --	42,134,171
Explosives, Fireworks and Matches	1927 --	12,921,079
	1928 --	13,534,862
Fertilizers	1927 --	1,844,032
	1928 --	2,092,457
Industrial and Pharmaceutical Preparations	1927 --	16,249,191
	1928 --	17,117,896
Paints and Varnishes	1927 --	25,229,454
	1928 --	27,601,138
Soaps and Washing Compounds	1927 --	19,993,453
	1928 --	18,649,842
Inks, Dyes and Colors	1927 --	3,221,677
	1928 --	3,221,475
Wood Distillates and Extracts	1927 --	1,587,704
	1928 --	1,647,137
Other Chemical Products	1927 --	11,900,521
	1928 --	12,779,291

Market Characteristics

The market for chemicals in Canada has at times baffled the shrewdest importers. It is by no means easy to estimate demand. The situation is simple when appreciated, but very disappointing to the individual who believes that the same methods may be used with safety here that might be followed in New York, or in any other large consuming centre.

Canadian buyers are quite as keen as any and demand services that tax the resources of importers and merchants. Some amount, however small, of every chemical product is required. A distributor usually must deal in rather more lines than would be the case elsewhere. Slight variations in a market, which at best is not large, makes it quite difficult to carry stock safely. If stock is not carried other troubles follow. The distributor naturally tends to seek import orders, which while not as profitable, leave him without the responsibility and risk of handling an item for which there may be no immediate spot market in Canada.

The inference here is not that Canada is so small a market that nothing but trouble exists in serving it. During the past ten years several splendid new organizations have been built up in the Canadian market and the next ten years will see the business of these firms enormously increased. Probably also Canadian branches or affiliations of large foreign, American and British houses not yet active will be established during this period. As statistics given later show, Canada is a splendid market for many chemical products, but talk will not increase the consumption of any item one iota, and there have been salesmen who were greatly disappointed because they did not take carload orders in lines where a few drums or bags was all they should expect.

In a word, the Canadian chemical market is a study in itself. Nothing short of the closest continuous,detailed contact and an organization that can distribute reasonably small quantities has any right seriously to enter the field. As an outlet for distressed material, it is not what it once was because of the close direct cultivation of business by Canadian organizations.

Canadian Production

Most of the above relates to generalities connected with the importing business. Canada is, of course, a considerable manufacturer of certain basic chemicals, and many fine chemicals and industrial products of a general chemical nature.

Broadly, those chemical industries are possible in a large way in Canada which operate under conditions which permit the development of export business. Such business must be in world competition, and in the case of Canada, where no market comparable to the United States exists, any really

large volume of business must be dependent on foreign trade. The fact that Canada can remain in the chemical picture at all under such circumstances, is a remarkable proof of the soundness of some of her resources.

Hydro-electric Power and Metal Resources

Two general factors play a large part in the development of basic chemical industries in Canada. One of these is hydro-electric power, and the other, her general metal resources. In the organic field no such special advantages prevail, although in primary organic resources Canada is not without much to display, particularly in the Western Provinces where already really enormous gas and coal resources are known, and in those provinces where the paper and cellulose industries flourish. To make this clear, it is only necessary to mention the Canadian ferro alloy business and the group of industries centered at Shawinigan Falls, Que., where a synthetic organic chemical industry has been developed, which is entirely dependent upon hydro-electric power. In the metallurgical field, electrolytic refining and production of aluminum, copper, nickel, lead and zinc are splendid examples. Here the mineral resources combined with the electric power and the usual smelting and refining processes have resulted in the development of basic chemical industries. The production of sulfuric acid from waste smelter gas in the Sudbury district of Ontario is an illustration. The same situation at Trail, British Columbia, leads directly into the fertilizer business, and the Consolidated Mining & Smelting Company has made rapid strides toward this objective in the past few years. There are quite too many interests involved in Canadian chemistry to even by name refer to any great number of them, but four very active organizations illustrate the development:—

Major Canadian Chemical Organization

1. The Shawinigan Water & Power Co., owners of Shawinigan Chemicals, Limited—already there are two major divisions of a chemical nature in this group, one interested in chemicals and calcium carbide, and one in special alloys production.

2. The Consolidated Mining & Smelting Co., Ltd., with its primary interest at the moment in copper, lead and zinc, and its logical development into the fertilizer and chemical fields.

3. The International Nickel Co.—copper and nickel and precious metal interests and enormous sulfuric acid potentialities.

4. Canadian Industries Limited: which organization centres in Canada both the Du Pont and Mond interests. Already a primary factor in the explosives industry, paints, lacquers, salt and all the chemicals which follow, including in this case synthetic ammonia and heavy acids. During the past year this company secured the Canadian Salt Co., and the Canadian division of the Grasselli Co. They also bought the Canadian Ammonia Co., and are interested in the production and distribution of chemicals in a national way.

These organizations are of the first order in resources. They all have infinite faith in the Canada of the present and future. They are building business for a to-morrow as well as to-day. In general, companies concerned at all with chemical production in Canada are in strong hands. Size is not the only measure that can be applied, but some of the larger organizations only can be mentioned.

Canadian Manufacuring

Just when to tell whether a country offers an opportunity for chemical manufacturing is a problem that leaves much room for argument. The typical case, as far as Canada is concerned, resolves itself into a question of how soon will that portion of Canadian business which may be taken by a Canadian plant pay its way.

If a manufacturer adopts the policy of delay until the market is obviously large enough, he will be quite too late, because there are enough investors willing to back Canada's future five or ten years ahead. If he rushes in without due consideration, he may find serious competition for years, not from other manufacturers, but from conditions. In general, Canada now has a better developed chemical industry for her population than any other country of the same number of inhabitants in the world. While no reference for such an observation can be given with accuracy, a review of production in various countries would seem to indicate that the statement is true.

Investment in Canadian Industry

The American manufacturer has at least one very certain kind of opportunity in Canada, and that is a chance to invest in the industry of the country itself. As an export market, Canada will be very poor indeed for those products which can reasonably be made by well organized industries anywhere. As the market grows it will offer splendid opportunities for those lines that are best made only in two or three countries throughout the world. American manufacturers should at least constantly study Canadian chemical markets. This study should be made in a scientific way. Too much similarity with American conditions should not be assumed unless the facts are known. Some individuality must be granted to Canadian business, because after all, it is export business from the standpoint of the American company, and no market can be held forever, least of all Canada, without manufacturing operations at a date

probably just a little before most people would care to make the move.

Trade Returns

Chemical business in Canada can be made a little more definite by reference to the last available statistics. In a general way 1928 was the biggest year in Canadian chemical business and in industry generally since 1918, when of course abnormal chemical operations were being carried on in the form of war work. During 1928 everything expanded —production, import and export. The Dominion Bureau of Statistics maintains a chemical price index based on 100 in 1913, and the increased business of 1928 was made during a period of price reductions. The average for that year was 149.3 as against 153.8 in 1927.

The capital employed in chemicals and allied products increased from $134,618,839 in 1927 to nearly $147,000,000 in 1928. There were in that year 568 plants of all kinds in Canada engaged in chemical and allied process work.

The whole trend of import trade in chemicals has not shown much change since 1925, but has been toward the United States. In the period, March 1928 to March 1929, Canada imported from the United States chemical products to the value of twenty-five and one-half millions of dollars or 69 per cent of her total importations. The balance of imports was 13 per cent with the United Kingdom and 18 per cent with other countries.

Canada's exports for the same period were not as large as this, although the United States took 50 per cent of them, amounting in value to $9,380,000. Trade with the United Kingdom was about equal in value, but Canada imported more chemicals than she exported by about $2,000,000.

Canadian trade returns, while available in very good detail, do not permit the public announcement of the business of one firm, if it is the only manufacturer of a particular product. This makes it somewhat difficult to secure all the detailed information regarding Canadian chemical production that might be desired, but these returns are included in the general totals which are correct for the industrial group names.

Canada as Market for Chemicals

Canada as a market for chemicals must be viewed after a close analysis has been made of the industries operating here. In a general way the large scale production of certain items, such as paper, may have an enormous bearing on the market for a limited range of products. Canada is a considerable producer of rubber goods, and of course requires rubber-compounding chemicals. All dyestuffs are imported, also all chemicals not made in a really large way in any country. Fine chemicals and basic pharmaceuticals are essentially all imported. Caustic soda and chlorine would meet with strong competition from Canadian products. Large importations of oils used in the paint and hydrogenation business are made. Where freight rates are large factors, Canada may export a product like sulfuric acid to points on or near the United States boundary. On such an item as acetic acid, world competition may be met fairly well in any market.

Recent Industrial Progress

The last year or two has seen manufacturing going into even stronger and better organized groups, and importing and distributing is placed in the hands of well established houses that are working either on a national or provincial basis for the manufacturers they represent. It is very hard to start an industry or an industrial development that does not increase the chemical market in some way. The best statement that can be made in regard to the chemical markets of the future in Canada, is the simple one that they will be a fair measure of the general industrial progress of the country. Canada is developing her own resources and her manufacturers still have a little time left to seek and secure considerable export trade.

The automobile industry in Canada is almost as much concerned with export business as it is with national sales. Canada, because it is part of the British Empire and through favorable trade relations, has for years been a splendid export manufacturing base for companies associated with American interests. Thus are chemical markets enlarged and these factors have an enormous influence on imports and production in the chemical field.

Japan Has But Three Companies Producing Synthetic Indigo

Production of synthetic indigo in Japan is not large at present and is confined to two companies, Miike Mining Co., subsidiary of Mitsui & Co., whose production is so small that no quantity is placed on the market, and the Nippon Senryo K. K., whose production is estimated at 6,000 picul (1 picul—132.3 pounds).

While importation of synthetic indigo is comparatively large, there is a tendency to import somewhat smaller amounts of synthetic indigo. Imports in 1925 were 16,240 piculs, valued at 2,618,000 yen; in 1926, 19,309 piculs, valued at 2,619,094 yen; in 1927, 16,854 piculs, valued at 2,224,843 yen, and in 1928, 12,964 piculs, valued at 1,674,837 yen (average value of 1 yen in 1928 = $0.4641 United States currency.)

Domestic production of natural indigo in Japan is shown in this table prepared by Assistant Trade Commissioner Howard N. Titus, Tokyo.

	Refined Indigo		*Crude Indigo*	
	Kwan	*Yen*	*Kwan*	*Yen*
1925.....	697,954	817,601	266,007	353,069
1926.....	408,579	473,919	212,272	232,124
1927.....	432,765	606,721	221,099	316,481

(1 kwan = 8.267 pounds). (Average value of 1 yen in 1925 = $0.4104 United States currency).

COST SHEET

Product_____ Code No._____

Cost Period_____ Production_____ lbs.

	Materials Consumed		Product	Cost
	Pounds	Cost per lb.	Amount	Cost per lb
MATERIALS CONSUMED				
Raw Materials				
(Detail)				
Total Raw Material Cost				
Intermediates				
(Detail)				
Total Intermediate cost				
Total Material Cost				
LABOR COST-PRODUCTIVE				
Direct Labor				
Supervision				
Total Labor cost				
MANUFACTURING SUPPLIES				
Direct				
Indirect				
Total Manufacturing Supplies				
POWER COST				
Direct				
Indirect				
Total Power Cost				
MAINTENANCE COST				
Direct				
Indirect				
Total Maintenance Cost				
FIXED CHARGES				
Direct				
Indirect				
Total Fixed Charges				
OTHER EXPENSES				
(Detail)				
Total Other Expenses				
Total Cost				

Chemical Cost Accounting

By Thomas A. Stewart

Out of the experiences of many years spent in the determining of chemical costs as chief accountant, National Aniline & Chemical Co., office manager, Calco Chemical Co., and public accountant with West, Flint & Co., Mr. Stewart offers some practical hints for determining chemical cost accounting policies.

CHEMICAL cost accounting is a very broad subject closely related to cost accounting for all manufactured products. The chemical industry, however, being comparatively new in this country, has brought to light many new problems in cost finding due to the peculiar nature of the various manufacturing processes and the instability, or rapid change, of materials in many processes.

This article is intended primarily for executives interested in the chemical business and it is the writer's desire that the comments offered may be of some value as an aid in reading cost reports and determining cost accounting policies. No attempt is made to cover the detail clerical mechanics of cost finding, which is largely controlled by the nature of the product, layout and facility of plant, etc.

The executive point of contact with the cost department is limited in most cases to the cost reports as submitted to them. Unfortunately these reports do not always present the cost data in readable form and the executive is unable properly to analyze and study the cost of a given product. Frequently the report is thrown aside with a comment to the effect that "Accounting is a mysterious art and cannot be understood by anyone but an accountant." This conclusion is not correct, however, as an accounting or cost report properly prepared, should be understandable; at least to an executive of the subject company. If not, it is usually the fault of the accountant and not the executive.

The basic part of a cost report is what is generally known as a cost sheet. The cost sheet should clearly set forth the cost of each product in sufficient detail to permit of careful analysis. After considering the cost requirements for various chemicals and products, it is the writer's opinion that the cost report should include substantially the cost data as set forth in the accompanying rough draft of skeleton cost sheet.

This skeleton cost sheet would be subject to modification to fit the needs of various chemical and dye products. The unit of production as stated is pounds although, in case of heavy chemicals, it might be tons or some other unit.

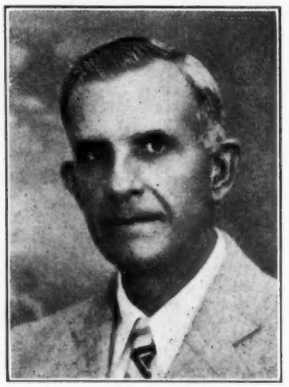
The main point to consider in cost reporting is a presentation of the data in such form as will permit the executive to analyze the various factors entering into the cost; it is therefore essential to know how much of the cost is direct and how much indirect. Direct cost can usually be controlled much more easily than indirect. There is a constant fight on the part of executives in charge to keep down indirect expenses and overhead.

As shown in the skeleton report, materials consumed are usually divided into two classes, viz: raw material and intermediates. Raw materials are that class of materials used in production which are not manufactured in the plant but purchased from other companies. Intermediates are products manufactured for use in other products, although some of these intermediates are also frequently sold as finished products. In some cases there are other classes of ma-

terials consumed in manufacturing a given product; such as residuals and off-grade products re-worked, etc. Space should be allowed on the cost sheet under "Materials" for listing this class of materials.

Productive labor consists of direct labor and supervision. Direct labor is the amount paid workers actually engaged in producing the product. Supervision consists of expenditures for foremen, department supervisors and plant superintendents, whose salaries are usually pro rated to the products. The cost department must always be able to furnish full details of supervision charges as this account is frequently abused through careless distribution or tendency of supervisors to favor certain "pet products."

Manufacturing supplies include all supplies other than productive materials which are used in the manufacturing process. Such supplies usually include fuel oil, filtering material, ice and refrigeration and miscellaneous supplies. If ice is manufactured in the plant, cost sheet should be prepared showing cost of production. Some accounting executives prefer to show ice as a "Productive Material Consumed," while some favor showing it under "Manufacturing Supplies."



Thomas A. Stewart

Manufacturing supplies should be divided as between direct and indirect for purposes of analysis of production cost.

In most chemical plants, power cost is usually an item of prime importance as a substantial power plant and equipment is an important part of plant property. Wherever possible it is desirable to meter the power lines going into the various departments so that the direct power consumed can be ascertained. Power cost sheets should be prepared showing the cost of producing the steam or other power units.

As in the case of power, maintenance is usually an important item of cost in a chemical plant due to the rapid deterioration of equipment, etc. resulting from the action of various chemicals. Maintenance cost should, of course, be divided as between direct and indirect maintenance, and in the cost department, at least, careful records should be maintained as between buildings, equipment and other plant property units.

Maintenance cost should always be studied carefully as it is quite easy to distort the cost of one product by the incorrect application of maintenance. The matter of replacement of equipment affects the maintenance account materially and for that reason adequate plant property records are essential in the correct application of maintenance charges.

Fixed charges usually consist of depreciation, taxes, insurance, etc. Depreciation is allied to the various products on the basis of the value of equipment used by the product and the rate of depreciation applying on that class of equipment. The charge also includes indirect depreciation on buildings used by more than one process and general plant facilities. Therefore, charges should always be shown divided between direct and indirect.

Insurance and taxes can usually be partially applied directly to the product although the amount involved is frequently not large enough to justify the effort required for such a distribution.

Other manufacturing expenses and overhead items should be detailed and wherever possible divided between direct and indirect charges. These expenses usually include warehousing, plant transportation, research and development, engineering development, administration, etc.

In the majority of these accounts, it is very difficult accurately to determine direct charges to the product without maintaining clerical records out of proportion to the benefits derived.

Research and development charges are frequently a very large item of cost but for the most part the expenditure is made in developing products before they go into plant production and is therefore not applicable directly to the product. The same is generally true for engineering development charges as these expenditures are closely allied with chemical research and development work.

One important item of cost frequently encountered in a chemical plant is what is generally termed "Idle Plant." The fixed charges and maintenance work necessary to keep idle buildings and machinery in good condition is usually very large and if a substantial part of the company's building and equipment is idle, it throws a tremendous burden on the products being produced in the other departments. Where this condition exists, such charges should be shown separately on the cost sheet under the head "Idle Plant Expenses." This, is necessary in order not to confuse cost of production under normal conditions with the abnormal cost existing in case of idle plants.

There has been agreat deal of discussion regarding the correct method of accumulating and showing idle plant charges. It is the writer's opinion, however, that if a small part of the equipment in a department is idle all the time or all of the equipment in a department is idle for a short time during the cost period, then no charge should be set up to "Idle Plant Expenses" as these conditions might be considered as normal in most manufacturing plants. However, if a department is entirely shut down during the cost period or perhaps a major portion of the cost period, then it is correct to show such charges under "Idle Plant Expenses."

It is not possible to outline a uniform cost system and forms for reporting costs that will apply to all chemical plants as the nature of the processes, plant facilities and other factors make it necessary to adopt different methods of procedure in order properly to

reflect the various classes of expenses. However, there are certain basic cost principles that apply to all chemical plants. It is the writer's opinion that the summary cost form explained above will apply to the majority of chemical companies with slight, modification to accommodate the individual requirements and conditions.

Distribution of Costs

As previously stated, it is not possible to outline a detailed method of cost distribution that will apply to all chemical plants. It is always desirable to distribute costs directly to the product wherever the direct charges can be accurately ascertained. There is a great difference of opinion regarding the best method of distribution where charges cannot be directly applied. In some cases it is best to apply certain indirect charges on the basis of direct charges. When the method of distributing indirect expenses is in doubt, it is usually best to distribute on the basis of productive labor. It is possible to set up a very intricate cost accounting system for the purposes of distributing the various classes of indirect expenses. Frequently, however, such a system is top-heavy and very expensive and after the distribution is completed, it is often found to correspond very closely to a productive labor basis.

The cost accounting executive should make frequent studies of the subject and adopt the best method obtainable in the order of, first, accuracy; second, cost; third, time required. If the matter of accuracy is not too far out of line, it is usually subservient to less expensive methods that will furnish the cost information at an earlier date. It is extremely important to have the cost reports available at as early a date as possible after the cost period is completed, otherwise it is impossible to adopt cost economies that will affect the next cost period.

The value of accurate cost reports to executives cannot be overestimated as the cost of production is the very heart of a manufacturing business and is the determining factor of success or failure. It is therefore essential that the proper company executives be thoroughly familiar with the cost of production of all products.

Most chemical products are on a highly competitive basis and it is necessary to watch every angle of cost, particularly when competition is such that the margin of profit is small.

Ammonium chloride is becoming increasingly prominent in Germany, which exports roughly 40,000 metric tons annually. German chlorine production is estimated at 110,000 tons. This combined with the developments of synthetic ammonia, now produced at the rate of 540,000 tons annually indicate what may be expected from German competition in that material.

Borax production in Chile has dropped from about 35,000 metric tons per year to about 12,000 metric tons per year, because of competition from the United States and subsequent declines in price.

Who's Who In Chemical Industry

Bell, William B., president American Cyanamid Company. Born, Stroudsburg, Pa.; 16 Feb. 1879; mar., Susan Alsop, 7 Nov. 1903; children: 1 dau.; educat., Haverford Coll., B.A. 1900, Columbia Univ., M.A. 1901, Columbia Univ., LLB. 1903. Amer. Cyanamid Co., pres. 1922-27, Air Nitrates Corp. pres. 1922-27, memb. Duke Endowment Brd. 1925-27. During World War gave valuable assistance to the pres. of Air Nitrates Corp. as advisor and asst. in bldg. Nitrate Plant No. 2. Clubs: University, City, (N. Y.), Uptown, Larchmont, Yacht, Indian Harbor Yacht, Eastern Yacht, N. Y. Yacht. Hobby: yachting. Address: American Cyanamid Co., 511 Fifth Ave., New York City.

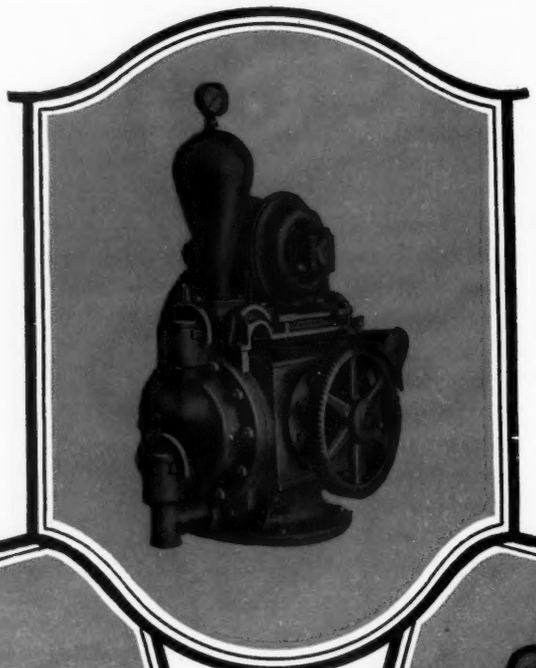
Hale, William Jay, director organic chemical research, Dow Chemical Co. Born, Ada, Ohio, 5 Jan. 1876; mar., Helen Dow, (Dec. 1918); children, 1 dau.; educat., Miami Iniv., A.B.; A.M., 1897; Harvard Univ., A.B., 1898; A.M., 1899; Ph.D., 1902; Traveling Fellow, 1902-03; Univ. Goettingen & Technische Hochschule Berlin. Univ. Mich. instr. and prof. chem., 1904-19; Dow Chem. Co., dir. organic chem. res., 1919 to date. Natl. Res. Council, chrmn., Div. of Chem. & Chem. Tech., 1925-27. Co-operating chem. to Chem. War. Service 1917-18. Investigation of high temperature and high pressure reactions applied to organic chem. Study of phenol and aniline synthesis from this standpoint. Memb., Chem. Soc. of Amer. Eng., Germany, Switzerland, France; Fellow Amer. Assn. Adv. Sci., Alpha Chi Sigma, Sigma Xi, Phi Lambda Upsilon, Phi Beta Kappa. Clubs: Chemists', (N. Y.), Cosmos, (Washington) Saginaw, University (Detroit). Hobbies: flowers, dogs, shooting. Address: Dow Chemical Co., Midland, Mich.

Haertel, Martin Henry, special representative, Producers and Refiners of Methanol. Born, St. Charles, Mo., 12 Nov. 1876; mar., Ethel Post, Berlin, Germany, 24 Dec. 1907; children, 1 dau.; educat., St. Charles Coll., Mo., B.S., 1894; Univ. Chicago Ph.B., 1901, Univ. Wis., Ph.D., 1906. On faculty Univ. Wis. till 1920; The Miner-Edgar Co., 1920-26; Producers and Refiners of Methanol, spec. rep., 1926 to date. Clubs: University, (Wash., D. C.). Address: 10 Orange Ave., Cranford, N. J.

Jeffcott, Robert Crawford, president, Calco Chemical Co. Born, 27 Aug. 1878; mar., Florence Ester Lux, Clyde, N. Y., 16 Dec. 1899; children, 2 sons; educat., Yale Univ., Ph.B., 1897. Genl. Elec. Co., 1897-1906; Cott-a-lap Co., 1906-1915, Calco Chem. Co. 1915 to date. Memb., Amer. Dyes Inst., (pres., 1920-22). Address: Calco Chem. Co., Bound Brook, N. J.

Killheffer, Elvin H., president, Newport Chemical Works, Inc. Born, Millersville, Pa.; 16 Jan. 1884; mar., Marcella C. Maher; children, 4; educat., Phila. Textile Schl., Phila. Coll. Pharm., Univ. of Pa. Shoemaker & Busch, Phila.; Saquoit Silk Mfg. Co., Southwark Mills, Phila.; Kalle & Co., N. Y., chief chem.; Amer. Color Mfg. Co., Passaic, pres. and chief chem.; Newport Turpentine and Rosin Co., vice-pres.; Newport Chem. Wks. Memb., Masons, Elks, Amer. Chem. Soc., Amer. Assn. Text. Chem. and Colorists (pres.). Clubs: Wool, Greenbrook Country, Newark Athletic, Milwaukee Athletic, Old Colony, Chem. Hobby: floriculture. Address: Newport Chem. Wks., Inc., Gregory Ave., Passaic, N. J.

Lenning, Frederick, president, Charles Lenning & Company, Inc. Born, Phila., Pa., 30 May, 1871; mar., Emily Obrie Merrick, 19 Oct. 1909; children, 1 son, 2 daus.; educat., Univ. Pa., 1891. Address: Charles Lenning & Co., Inc., 222 W. Washington Square, Phila., Pa.



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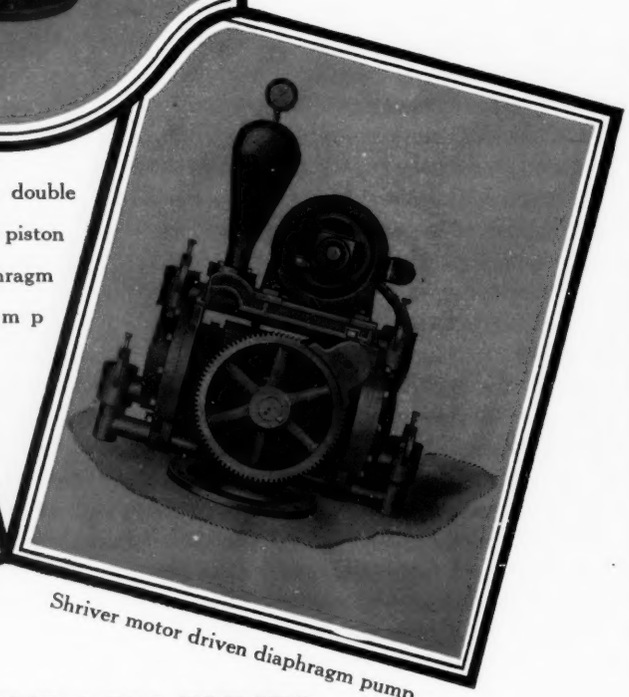

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New Uses for the COLLOID MILL In Chemical Production

By J. J. Marcus
Chemicolloid Laboratories, Inc.

MODERN production methods have demonstrated that whenever there has been a demand for a certain type of product mechanical skill and ingenuity have not lagged far behind in producing that commodity. In all of the phases of chemical technology, when competition has demanded new products, new methods, new equipment, someone has always been able to supply that demand. Thus, stainless steels have been developed to resist corrosion; four hour drying enamels have been perfected to meet the competition of lacquers; supercentrifuges have been designed to meet new conditions in the oil refining industry.

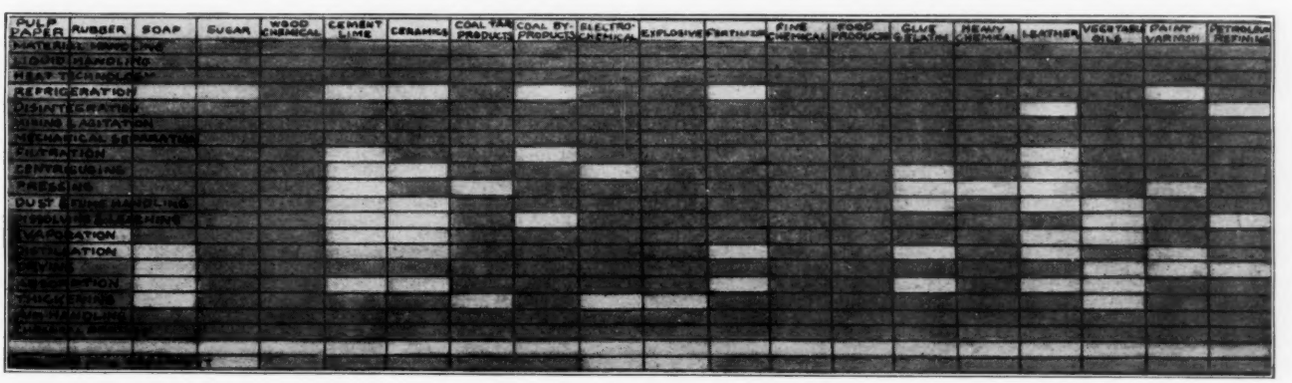
This has not been true of the colloid mill.

When the first patents for a colloid mill were granted to Plauson in 1919, he used the mill for preparing colloidal suspensions of various materials. Subsequently, it was discovered that the mill would work equally well for emulsifications, dispersions, and homogenizations.

By virtue of the fact that it could be used for so many purposes, it was regarded with suspicion by the chemical industries. Its development was also retarded by the shroud of secrecy with which the performance of the mill was enveloped. While it is true that in the preparation of emulsions, certain stabilizing agents give better results than others, it is improper to correlate the choice of agent, which is largely a matter of trial, with the performance of the mill. It is the purpose of this article to remove this shroud of secrecy and show what results are being obtained in the industries using the colloid mill, and its possible applications.

The colloid mill is essentially a high speed machine in which materials of unlike phase are brought into extremely intimate contact. It consists of a rotor revolving at high speed and within a small adjustable clearance from a stator. Due to the high speed at which it rotates (3,699 R. P. M. in most commercial machines), and the small clearances, material passing between the gap between the rotor and stator is subjected to the force of hydraulic shear. This shearing action results in a comminution of particle size in the case of solids carried in water or other fluid media; in the case of unlike fluids, treatment in the mill effects emulsification or homogenization.

There are two types of colloid mill being manufactured at the present time; those containing smooth surface rotors and stators, and those containing roughened surface rotors and stators. The advantage of the roughened surface mills is that, in addition to the force of hydraulic shear, there is obtained an ad-



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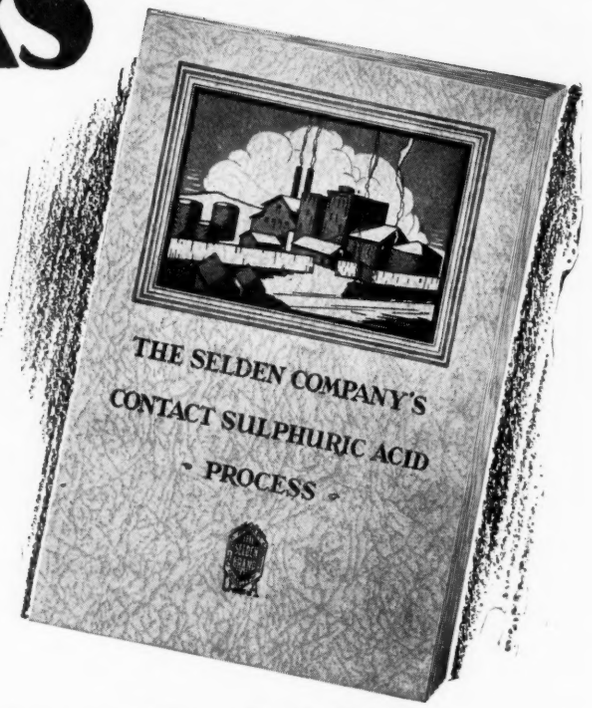

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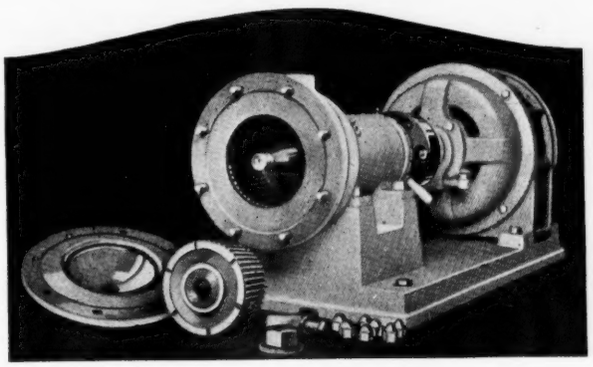
ditional force—the force of impact action. The roughened surface mills have been shown to be especially efficient for the disintegration of solid particles.

The use of a colloid mill presents many opportunities for decreasing production costs. Its productivity is extremely high—some mills produce at the rate of 6,000 gallons per hour. Its power consumptions are low. Floor space requirements are very small. Its production is continuous. These factors tend to decrease manufacturing costs and overhead markedly.

In addition to lowering costs, the product manufactured is in many cases of improved quality so that, by marketing an improved product, its saleability is increased. In several cases, where it was desired to increase production, an installation of colloid mills obviated the necessity for erecting a new building to house the equipment. Another factor which is of great economic importance in the installation of colloid mills is the labor savings factor. The operation of the mill being positive and continuous, it requires very little attention.

Wide Application in Industry

The industries in which the colloid mill is being used represent the entire field of chemical technology. Its possibilities for decreasing production costs are enormous and new uses are being found for it constantly. The accompanying chart demonstrates graphically the extent to which the colloid mill can be used in industry. In this diagram, twenty of the largest and most important chemical products are listed across the top. The unit processes in manufacturing these products are listed at the side. The shaded portions in the graph represent those unit processes which are utilized in manufacturing various



View of a typical colloid mill looking into the stator with the rotor removed and standing in front

products. As is shown, the colloid mill can be used in every major chemical industry but three.

In the pulp and paper industry, the colloid mill is of particular interest. It presents enormous opportunities for cutting power consumption and producing a stronger paper. Several preliminary experiments have already been performed on a plant scale in which the mill is used to separate the fibres. At the present time, this operation is being performed by Jordan Engines. A comparison between the performance of the colloid mill and the Jordan on Kraft stock is tabulated below:

	Power Consumption H. P. hrs. per ton	*Increase in strength Factor*	*Decrease in Tear Factor*
Colloid Mill	187	44	31
Jordan	860	45	80

This table shows that the action of the colloid mill is less destructive on the stock than that of the Jordan. The savings in power based on a production of 150 tons per day, and a power cost of $50.00 per H. P. year would amount to approximately $200,000.00 annually. In addition, there is the advantage of flexibility of operation. The disadvantages are the smaller rate of production (the production being about one-half ton per hour), and the relative high upkeep cost; the rotors and stators of the colloid mill wearing out more rapidly than the core of the Jordan.

In the paint, varnish, and lacquer industry, the colloid mill again presents great opportunities for increasing production and cutting production costs. In this industry, the colloid mill is displacing stone mills and roller mills by virtue of its greater productivity. On flat white paints, the colloid mill has a production up to 300 gallons per hour as against a production of 50 gallons per hour for a stone mill. Because the colloid mill will handle the finished paint instead of a paste, the use of the colloid mill eliminates one step in production. The floor space savings has enabled quite a few plants to expand considerably without constructing new buildings. The labor cost has been reduced considerably, the mills requiring no attention and being cleaned automatically. In addition to these factors, the grinding process can be more closely controlled and the operation can be performed on a more positive basis. The product manufactured in the colloid mill has better settling properties and canned goods can remain on dealers shelves for a much longer period.

Grinding Pigments and Colors

The grinding of pigments and colors for use in the rubber and paint industry is another important use of the colloid mill. The rubber industry is demanding a finer and finer product. Processing these colors through the colloid mill gives a product of extreme fineness, and in some cases increased color strength. In the manufacture of lithopone, the colloid mill has been adopted as standard equipment in response to a demand by paint manufacturers for a finer product. In addition to the fineness of particle size obtained, the texture of paints made with colloid mill treated lithopone is superior to paints made with ordinary lithopone.

In the food product industry the colloid mill finds quite a number of uses. Solid particles in the foods

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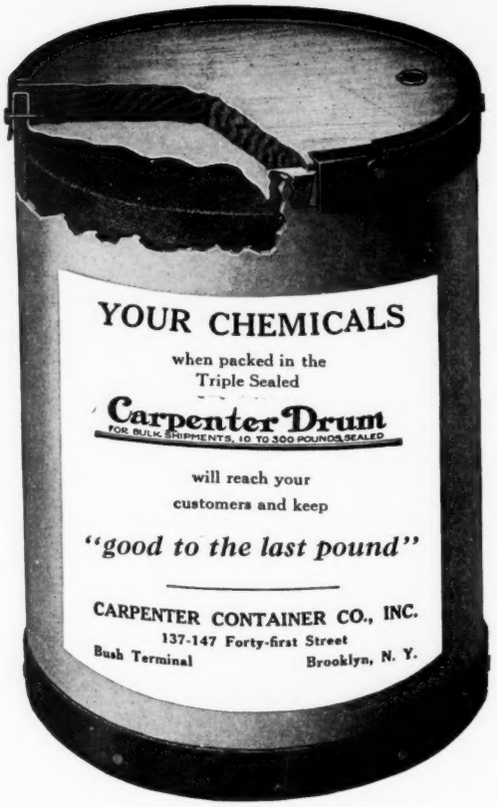

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are broken up and dispersed so finely that the resulting product has an improved taste. In chocolate syrups, for instance, the various ingredients show a tendency to settle out of suspension. Treatment in the mill gives a product in which the tendency to settle out is removed, and a product of superior taste. As another example, mayonnaise emulsified in the colloid mill gives in addition to the economies effected by continuous production, a product in which the taste and odor of the condiments are brought out considerably. As a result, the maynonnaise can be manufactured with less spices and with no loss in taste.

Saponifying Fatty Acids

In the soap industry, the colloid mill is of theoretical interest. While there are, to the writer's knowledge, no commercial installations in use, it is well known that the colloid mill will saponify fatty acids almost instantaneously. In view of the lengthy period now consumed in saponification and the large amounts of steam necessary to keep the reaction going, the colloid mill may be able to perform this operation with considerable savings. There are many other problems that would arise in connection with the use of the mill, but all these factors would tend to convert the industry from batch process work to continuous processing, with the resulting economies that ensue.

Another problem in which the colloid mill may be used to speed up the rate of chemical reaction is in the refining of gasoline. As this process is now performed, gasoline is mixed up with concentrated sulfuric acid to remove the unsaturated pydro-carbons. The sludge containing unused acid and sulfonated hydrocarbon can then be removed by allowing it to settle and drawing it off, or by centrifugalization. The time during which the acid remains in contact with the gasoline is very important in determining the character of the product obtained. Due to the intimacy of contact that may be obtained in the colloid mill, the reaction may be performed within it instantaneously. This problem is at the present time being investigated from a commercial angle.

In many industries the colloid mill is being used in the preparation of emulsions of animal, mineral, and vegetable oils. Use of the mill for emulsification gives a product at a high rate of production and of great stability and homogeneity.

Summing up, the use of a colloid mill presents the following methods for cutting production cost: low power consumption; low labor costs; small floor space requirements; continuity of operation; improvement in quality of product.

Magnetic Manufacturing Co., Milwaukee, announces appointment of Wells Fargo & Co., S. A., Mexico, D. F., as exclusive representative in that country.

New Plant Construction

American Cyanamid Co. plans construction of new plant near Johnson City, Tenn., consisting of several units to cost more than $800,000 with equipment. In connection with new unit, The Holston River Power Co., a subsidiary, will carry out a hydro-electric power project, development of which will cost about $20,000,000.

Consolidated Mining & Smelting Co. of Canada announces plans for construction of huge fertilizer plant at Trail, B. C., estimated to cost about $8,000,000. Construction of first unit for manufacture of fixed nitrogen will begin at once and other units will follow.

American Aniline Products Co. plans rebuilding of portion of Lock Haven, Pa., plant destroyed by fire with loss of $40,000. Company also plans construction of new plant unit to cost about $140,000 with equipment.

Stauffer Chemical Co. completes plans for construction of first unit of sulfuric acid plant at Hammond, Ind. It will consist of several buildings reported to cost over $350,000.

Tennessee-Eastman Corp., Kingsport, Tenn., approves plans for erection of two plant units to cost over $185,000 including equipment.

International Agricultural Corp. plans construction of fertilizer plant at Texarkana, Ark. First unit will be 140 by 300 feet and will cost about $125,000.

National Aniline & Chemical Co., Buffalo, plans construction of plant addition to be one-story, brick and steel, and to cost about $35,000.

Wilckes-Martin-Wilckes Co. plans rebuilding of that portion of its Camden, N. J., plant destroyed by fire with approximate loss of $100,000.

Stauffer Chemical Co. announces completion of $250,000 carbon disulfide plant at Roanoke, Va.

National Acetate Silk Co. is said to be planning construction of plant for manufacture of cellulose acetate yarn.

Sylvania Industrial Corp. secures site in Fredericksburg, Va., upon which it plans erection of plant.

United Carbon Co. announces completion of new carbon black plant at Rock Creek, Tex.

Harshaw Chemical Co., plans erection of addition to Philadelphia plant to cost about $60,000 including equipment.

Bemis Bag Co.'s new plant at Talladega, Ala., costing over $3,500,000 will be completed about October 1.

Swift & Co. plans construction of $35,000 addition to fertilizer plant at Shreveport, La.

McGean Chemical Co., Cleveland, begins construction of new plant to cost more than $125,000 with equipment.

Combustion Engineering Corp. announces division of Atlanta district into three territories with offices at Atlanta, Charlotte, N. C., and New Orleans. T. W. Battle is district manager, Charlotte territory; I. S. Forde, acting district manager, Atlanta territory; and E. C. Walthall, district manager, New Orleans territory.

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TEXTILE—a petroleum thinner for use in replacing Benzol, Toluol, and other coal tar solvents; has the same evaporating time as Benzol; widely used by large industries, artificial manufacturers, textile manufacturers, etc., as a substitute for Benzol; more efficient and more economical.

KEMSOLENE—a petroleum thinner for use as a diluent and a vehicle to carry the active solvents in the manufacture of lacquers; has an exceptionally high flash.

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Denatured Alcohol
(all formulas)

Formaldehyde

Phenol U. S. P.

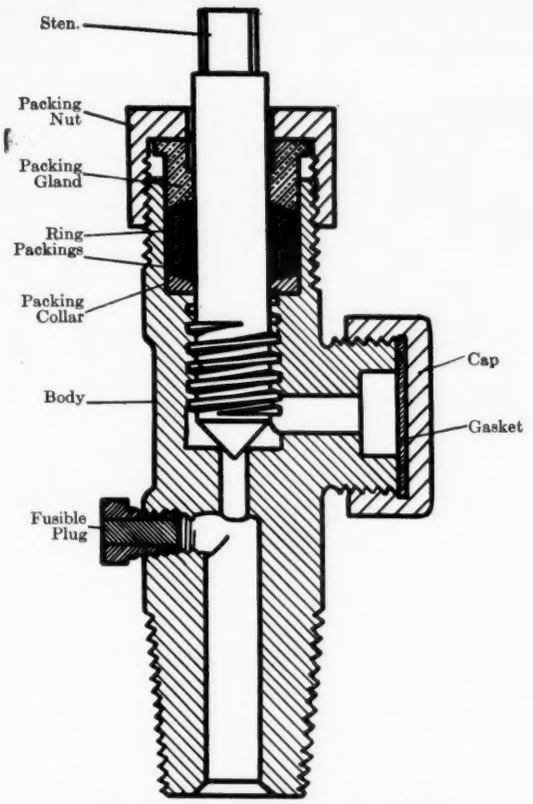
Benzol

Whiting

Magnesium Carbonate

Magnesium Oxide

Quinine Bisulphate



The Chlorine Institute Standard Valve

Standard Valves *for* Chlorine Containers

By Robert T. Baldwin

Secretary, The Chlorine Institute, Inc.

On October 13, 1926, the Fifth Session of the Public Health Engineering Section, American Public Health Association, at Buffalo, New York, by appropriate motion authorized the Secretary of the Section to communicate with The Chlorine Institute, Inc., and the American Water Works Association with reference to the standardization of valves for chlorine containers. The Chlorine Institute, Inc., received the resolution and through the work of its Committee on Container Specifications and Safety has approved and adopted standard valves for chlorine containers under 15 tons capacity. These valves are rapidly going into circulation and we shall presently have but one kind of chlorine valve in the sanitary field throughout Canada and the United States of America. They have passed very exacting criticism and tests and their use is not confined to Institute members. Recently these valves have been well tested in sulfur dioxide containers and appear to be suitable for that substance also.

WE hear and read much about standardization, and find too great emphasis placed on the benefits to the consumer. The purveyor benefits also, but, best of all, both parties gain some measure of freedom that can be expended on more important things. In this case the user has but to learn the handling of one valve instead of several; his margin of safety is increased; he has one less worry. As for the chlorine maker, he does not have to maintain a tradition of his own or other's making that the particular valve or valves that he has used for years are distinctive and best. Such traditions or inattentions are often expensive if closely examined, but the general contrariness of human nature makes change difficult to accomplish.

The Committee handling this valve matter met at intervals; composed honest differences of opinion; discarded some cylinder caps; buried a few prejudices; had the very considerable services of one of its members, The Wallace and Tiernan Company, Inc., in furnishing drawings, expert advice and sample valves; and emerged from the proceedings and tests with a standard valve. The success of the Committee with this valve warrants the standardization of other chlorine container apparatus and the work goes on. There is, nothing extraordinary about it; a nice weighing of the factors and a will to have the thing done are the necessities. It is common sense, and after all, common sense is the essence of good engineering and safety.

Before quoting the specifications, it is to be noted that the valve with safety plug for the containers holding 100, 105 and 150 pounds of chlorine is adapted to both union and clamp fittings, and is suited to the thousands of connections now employed in the sanitary field. Exactly the same valve, except that it has a ¼ inch seat opening and no safety plug, is provided for the container holding 2,000 pounds of chlorine. This ton container is equipped with safety plugs, three in each head, as described in "The One Ton Liquefied Chlorine Gas Container" (Jour. Amer. Water Works Assoc., October, 1927, pp. 417 et seq.). Like the other valve it fits all existing connections and can be used with either union or clamp.

The specification is as follows:

Specifications for the Chlorine Institute Standard Valve for 100-105 and 150-pound Containers

(*Approved and accepted by the Board of Directors of The Chlorine Institute, Inc., December 7, 1928*)

I. *General.* The valve shall be of the internal thread type, repackable under pressure, provided with outlet connection to accommodate present standard connections, i. e., the ¾ inch straight pipe thread union and the standard Mathieson yoke and adapter. For

Globo

Spray Congealed

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Meets the demand for an improved water softener- and cleaning-compound---

GLOBO,* Spray Congealed Tri-Sodium Phosphate has set a new high standard of quality in water softeners and cleaning compounds. It has introduced improved methods in the manufacture of Tri-Sodium Phosphate. But only GLOBO* measures up to the exacting Federal specifications.

GLOBO* is a superior Tri-Sodium Phosphate of uniform globular shaped crystal size—free flowing and quickly soluble. It will meet your requirements for improved quality without increase in price. Order a sample keg, bag or barrel. Immediate delivery will be made.

FEDERAL PHOSPHORUS COMPANY
Division of
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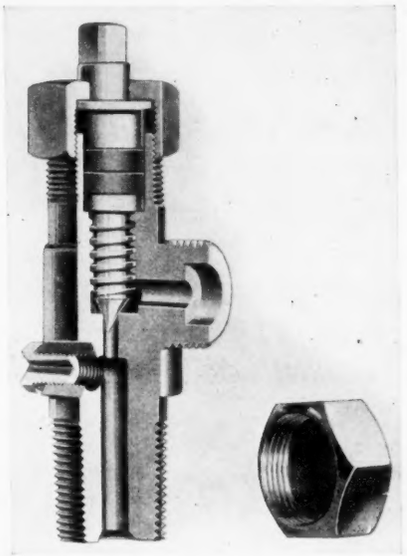
Birmingham, Alabama

GLOBO *is packed in the following size containers:*
125 lb. Kegs
200 lb.—Bags
325 lb.—Bbls.

SWANN S PRODUCT

**The name* GLOBO *is derived from Globular meaning round or spherical in shape.*

details of design, limits, material specifications, methods of manufacture and testing, see drawings No. 12/30-H, Sheets No. 1, No. 2, No. 3, No. 4, No. 5, No. 6, No. 7, No. 8, No. 9, dated December 27, 1928, as prepared by the courtesy of Wallace and Tiernan



The standard valve with one-quarter section removed

Company, Inc., which drawings are a part of these specifications.

II. *Body.* Brass forging consisting of 58 to 61 per cent copper, 1.5 to 2.5 per cent lead, the remainder zinc. (Shown on drawing No. 12/30-H, Sheet No. 2.)

The standard valve with yoke type auxiliary valve and yoke

a. Outlet connection. External ¾ inch straight pipe thread, 14 pitch, V form; pitch diameter 0.9830 inch plus 0.000 inch, minus 0.0005 inch to minus 0.0035 inch limits. Inside of outlet boss to be counterbored; diameter of counterbore to be 0.5625 inch plus 0.003 inch minus 0.003 inch; depth 15-64 inch plus 1-64 inch minus 0.000 inch; outer end of boss and bottom of counterbore to be machined smooth and flat to accommodate gaskets. (See drawing No. 12/30-H, Sheet No. 2.)

b. Shank thread. Standard Briggs pipe taper of such size as to enter a ¾ inch Briggs Standard Pipe Gauge ½ to one turn. Threads to be 1⅛ inch long; increased diameter to be in accordance with Briggs standard taper for overlength threads. Standard oversize for oversize cylinder threads shall be same as above with exception that the thread shall be 1-16 inch oversize in pitch diameter. In both cases the thread shall conform to the Briggs standard pipe thread without flats. (See drawing No. 12/30-H, Sheet No. 2)

c. Seat. Integral with body, not renewable. Three-sixteenths inch opening for 100-, 105- and 150-pound containers. (See drawing No. 12/30-H, Sheet No. 2.)

The standard valve with union type auxiliary valve

III. *Fusible plug and fusible metal.* The fusible plug shall consist of a threaded bronze container to screw into the valve body. The fusible metal shall be Niagara Alkali Company, i. e., Jaeger Salts formula. (Details shown on drawing No. 12/30-H, Sheet No. 3.)

IV. *Stem.* Monel metal with ⅝ inch by 8 Acme right hand thread, rotating type. Top of stem to be ⅜ inch square. No handle required. (See drawing No. 12/30-H, Sheet No. 4.)

V. *Packing nut.* Brass, external type; 1⅛ inch by 18 thread. (See drawing No. 12/30-H, Sheet No. 5.)

VI. *Packing gland.* Brass; shaped to compress packing to stem. Clearance between follower and stem to be increased a short distance from the lower end to avoid freezing. (See drawing No. 12/30-H, Sheet No. 6.)

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Acetaldol
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OUR U. S. P. GLACIAL ACETIC ACID is now available in 50 pound aluminum containers, packed two in a crate.

This is a SUPERIOR GRADE suitable for U. S. P. edible and fine chemical uses requiring an exceptionally pure material.

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SALES OFFICE AND PLANT

Niagara Falls
NEW YORK

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JOSEPH TURNER & CO.

19 Cedar St. -:- New York

VII. *Packing ring.* Brass; loose collar shaped to compress packing to stem. (See drawing No. 12/30-H, Sheet No. 7.)

VIII. *Outlet cap gasket.* One-sixteenth inch Garlock No. 902, or equivalent; diameter 0.960 inch. (See drawing No. 12/30-H, Sheet No. 8.)

IX. *Outlet cap.* Brass; hexagonal in shape. Dimension from flat to flat of hexagon shall be same as that of packing nut so that the same wrench may be used for both. (See drawing No. 12/30-H, Sheet No. 9.)

X. *Packing.* Shall consist of two self-lubricating split ring type packing such as Garlock No. 343, or equivalent, free of oil; inside diameter ½ inch, outside diameter ⅞ inch, thickness of each ring ¼ inch.

Manufacturers' Publications

Lewis-Shepard Co., Boston, publishes the Stacker edition of "Jacklift and Stacker Practice," describing applications of various types of stackers.

Magnetic Manufacturing Co., Milwaukee, announces issuance of new bulletin No. 90, devoted to magnetic separation of lime, gypsum and various grains.

Bailey Meter Co., Cleveland, issues Bulletin No. 82, describing the "Bailey Thermo-Hydraulic Feed Water Regulator."

Selden Co., Pittsburgh, issues well-illustrated 16 page booklet describing operation of its new contact sulfuric acid process.

Dust Recovery & Conveying Co., Cleveland, issues folder describing the use and care of the "Pollenair" fan.

Surface Combustion Co., Toledo, issues bulletin describing the SC counterflow carburizing furnace.

Combustion Engineering Corp. publishes folder describing the C-E Water Level indicator.

British sulfuric acid production showed a gradual growth to 920,000 tons in 1928 (100 per cent basis). In 1927 it amounted to 889,000 tons, in 1926—722,000 tons as compared with over 1,000,000 tons in 1913-1914. The proportions obtained from the different raw materials to-day are approximately as follows: Pyrites 44 per cent, spent oxide 25 per cent, brimstone 21 per cent, and zinc concentrates 10 per cent. The principal long range trend is away from pyrites, whereas, the most recent development is the acid produced from the by-product sulfur of the zinc industry. This is about 10 times that of a decade ago, according to Trace Commissioner Homer L. Fox, London.

Alcohol can be cheaply produced from bagaz, the hitherto worthless residue of henequen, according to tests in Mexico. An association of henequen growers has been organized in Mexico City to produce alcohol in this manner, and it is said the liquid can be brought forth in considerable quantities. The association has acquired machinery, and will undertake the extraction on a large scale.

A novel process for benzol refining is claimed by the Societe du Gaz de Paris (French Patent 655,899 of 1927). The vapours distilling up to 145 to° 400° are directed over potash incorporated with a binder which remove the diolefines, and then over alkali or alkaline earth sulfides which removes the sulfur products.

Freight Rate Decisions

New York State Public Service Commission approves reduced freight rates for the New York Central Railroad (East) on glauber's salt and soda bisulfate, in carloads, minimum weight 40,000 pounds, from New York and Brooklyn stations, Long Island City (Pidgeon street terminal), New York (including lighterage), Melrose junction, and Westchester avenue to Johnstown and Gloversville (on Fonda, Johnstown & Gloversville). The new rate is 30.5 cents per hundredweight and is effective from June 24.

The commission has also approved an amendment to the tariff of the same railroad on washing crystals, washing powder and washing soda in carloads, from Solvay and Syracuse to stations on the Pittsburgh, Shawmut & Northern (Wayland to Hornell and Portville inclusive), under which the commodity rate of 19 cents per hundredweight is canceled and class rates restored with increases effected, effective July 23.

Commission also approves new freight rates of the New York Central (East) on potash (muriate and sulfate of), carload, minimum weight 40,000, from New York and Brooklyn stations, Long Island City (Pidgeon street terminal), New York, including lighterage, Kingsbridge, Morris Heights, High Bridge, Melrose Junction, Westchester avenue and Port Morris to Williamson, 19c per cwt. Reductions. Effective August 5, 1929.

Commission also approves a reduced freight rate of 22 cents per hundredweight for the New York Central Railroad (East) on alum, carloads, minimum weight 40,000 pounds, from New York and Brooklyn stations, Long Island City (Pidgeon street terminal), New York (including lighterage), Kings Bridge, Morris Heights, High Bridge, Melrose Junction, Westchester avenue, and Port Morris to Rochester. They are effective from July 22.

Commission also approves new freight rates of the New York Central (East) on soda (silicate of) in tank cars, carload from Depew to North Tonawanda 6c, reduction 1c per cwt.; effective August 5, 1929.

Bureau of Standards Recommends Simplified Practice on Barrels

National Bureau of Standards announces that proposed simplified practice recommendation for tight cooperage and tight cooperage stock, (wooden barrels and kegs) developed by a general conference of interested elements of the industry on May 16th, is now being sent to manufacturers, distributors and representative users for signed acceptance to the proposed schedule. When the Division of Simplified Practice has received sufficient signed acceptances, representing at least 80 per cent. of the industry, by volume of annual production, the recommendation will be printed as part of the "Elimination of Waste" series of the Department of Commerce. Effective date of the program is July 1, 1930.

Production of synthetic methanol is contemplated by the firm Evence Coppée at its coke oven plant at Willebroeck, Belgium. This installation, when completed, will be the first in Belgium for the synthetic production of methanol.

Oxyweld Acetylene Co. introduces two new types of trucks to accommodate Type CLP-3 and CLP-2 low-pressure acetylene generators.

Meurer Steel Barrel Co. moves general offices from Long Island City to the site of its new plant in Newark, N. J.

Imperial Chemical Industries, Ltd., is reported to be negotiating for the establishment of a fertilizer industry in Turkey.

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Disodium Phosphate

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Japanese Soda Ash Industry Aided By 213,000 Yen Subsidy

Soda ash industry in Japan is granted subsidy of 213,000 yen for the current year. (1 yen in 1928=$0.464 United States currency). The progress of this industry in Japan has been retarded by the uncertain cost of the raw material which is obtained from China. Fluctuations in the value of the domestic output per ton are said to be due to variations in salt prices. The local production and value per ton in recent years were as follows: 1924—2,206 short tons valued at 329 yen per ton; 1925—12,304 tons, 90 yen per ton; 1926—19,089 tons, 45 yen per ton; 1927—25,496 tons, 175 yen per ton.

Imports of soda ash are composed largely of the natural soda from Lake Magadi, supplied by the British and natural soda (Trona) from the United States, says Assistant Trade Commissioner H. B. Titus, Tokyo. During recent years the imports of natural soda ash combined were as follows: 1924—131,005 short tons, 1925—143,314, 1926—40,297, 1927—110,477, 1928—86,513.

Canadian Salt Shipments Increase 11 Per Cent in 1928

Canadian salt shipments during 1928 totalled 299,445 tons valued at $1,495,971, an increase of 11.5 per cent in quantity, but a decrease of 7.3 per cent in value as compared with the 1927 production. The latter was 268,672 tons valued at $1,614,667. In 1928 the average price for all grades of salt was $5 a ton, comparing with $6.01 in the previous year.

Most of the 1928 production came from Ontario, which produced 279,841 tons. This was 92.5 per cent of the entire Canadian output and represented a 10 per cent increase over 1927. Nova Scotia's output from the Malagash mine increased 36 per cent in 1928.

In spite of the increased home production in 1928, imports also showed an increase of about seven per cent, amounting to 189,025 tons valued at $1,122,968. Exports of Canadian salt totaled 2,930 tons valued at $36,399.

Ten firms are reported as engaged in the Canadian salt industry, employing a capital investment of $4,422,922.

Imports of calcium carbide by Australia declined 30 per cent and potassium and sodium cyanide declined 20 per cent in 1927-28 as compared with the year 1926-27. Canada, Norway, and Sweden supplied the carbide which totaled 25,828 hundredweight ($12-pounds) in 1927-28. The cyanides trade in 1926-27, totaling 1,386,765 hundredweight, was about equally divided among the United States, Great Britain, and Canada, but the following year while the British share increased slightly, the United States lost 288,680 hundredweight and Canada 130,000 hundredweight.

Spain has forty superphosphate plants, with a capacity of 1,300,000 tons per year, and which only work to the extent of 900,000 tons per year, according to Antonio Llopis, president, National Chamber of Chemical Industries, Spain. He blames this on the low import tax which permits imports of 200,000 tons per year.

Raymond A. Morrison, formerly superintendent and chemist, Northwestern Chemical Co., Marietta, Ohio, becomes chemist in charge of development work, Western Paint & Varnish Co., Duluth.

Syrup Products Co., Inc., subsidiary of Spreckels Sugar Corp., announces election of Edgar H. Stone as president, The Syrup Products Co. manufactures alcohol and lacquer solvents.

Prest-O-Lite Co., Inc., adds two new acetylene gas plants at Wichita, Kansas, and Youngstown, Ohio.

German Potash By-Product Cartel Meets Dissension

German potash by-product cartel contracts are subject to disagreement, the major dissension dealing with quotas in the rock salt cartel. Contracts on magnesia chloride, epsom salt, and bromine, which, after extension, will expire at the end of this year, are also showing unstability.

It is considered likely that producers will be forced into free competition unless the unexpected happens. This is notably true of bromine, according to the Department of Commerce.

After organizing with difficulty two years ago into the local rock salt cartel (Verkaufsvereinigung deutscher Steinsalzwerke) murmurs of discontent are again being heard over repeated claims of the German Solvay works for a higher quota. While the Bernburg works of the Solvay company has a satisfactory quota, its Rhenish works has not, despite extensions of the production capacity. The particular opponent against the Solvay claims is the important Salzwerk Heilbronn Aktiengesellschaft. Furthermore, certain potash works are extending their production capacities, without assurance of a cartel quota. This circumstance presents the possibility of dissolution of the rock salt syndicate by the end of this year. The leading potash works have the largest quotas in the salt cartel, these comprising 77 per cent.

I. G. Explains Conservative 12 Per Cent Dividend Policy

I. G. Farbenindustrie justifies conservative policy in maintaining a 12 per cent dividend for 1928 on the grounds that it foresees a period of economic and financial difficulty in Germany in the near future and seeks to conserve its resources. Furthermore, the I. G. does not intend to seek more foreign capita lif it can help it and both these factors have influenced the board fn adopting its policy of building up an adequate reserve.

I. G. Farbenindustrie acquires 40 per cent. of the capital of the Rheinmetall A. G. The latter company is the only concern permitted under the Treaty of Versailles to produce certain limited quantities of materials for the navy and is also a producer of fine steel railway materials, etc. The I. G. has provided one-third of the capital for the new iron and steel works at Vochum, which will be completed in the autumn. It is also making efforts to obtain control of a small steel sheet works in Westphalia. The I. G. is now making most of the steel tubes for its chemical works.

Chinese Attempt to Install Sulfuric Acid Plant Fails

Chinese authorities at Wuchow were induced by German interests to install a $400,000 sulfuric acid plant in order to be independent of Japanese supplies of this acid. Difficulties have arisen because the raw material (iron pyrites) must be obtained from one of the Provinces at a greater distance than originally planned, with a resulting delivered cost of about $10 per ton. It is, therefore, doubted whether the plan can be operated on a paying basis, according to the Department of Commerce.

Phosphate rock has been found to exist in paying quantities in the interior of Brazil at Ipanema, Cabreuva and Cascaval. Plans are being made by the Government to import modern machinery and start working immediately the deposits at Ipanema.

Italy's biggest consumer of electric power is the chemical industry, Montecatini alone consuming about 1,000,000,000 kwh. annually in its various plants throughout the country and producing half the total.

American Manganese Producers Association will hold annual convention at the Mayflower Hotel, Washington, D. C., September 9 and 10.

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German Potash Syndicate Reports 15 Per Cent Sales Increase in 1928

German potash syndicate reports for 1928 sales of 1,421,000 metric tons of pure potash (K_2O), including 31,000 tons of K_2O ware housed in the storage plants at Bremen and Harburg on the Elbe. This figure was 14.69 per cent more than the corresponding sales in 1927, 19.62 per cent more than the average sales in the last three years, and 18.02 per cent in excess of the sales in 1913.

The approximate 15 per cent sales increase in 1928 resulted mostly from exports, which reached 552,000 tons K_2O, or 20.06 per cent more than in 1927. Credit for the increase is given to the more harmonious operation in foreign countries of the consolidated Franco-German import agencies, formed under the potash pact between Germany and France. Another factor that cannot be ignored is the increased percentage of potash in the fertiliser mixtures used by the American farmer, says the "Chemical Trade Journal," London.

The new chemically mixed fertilisers also provide a good market for the Potash Syndicate. The Nitrophoska, produced by the I. G. at Piesteritz, affords the best single outlet for domestic stocks. The I. G. is now by far the Potash Syndicate's best single customer. The Rauxel plant of the Kali-Kloeckner company (Gewerkschaft Victor), which began production in September, 1928, is another promising customer for potash, for mixture in potassium nitrate with synthetic ammonia produced from the Kloeckner works' waste coke-oven gas hydrogen. Another plant of this enterprise will go into full production at the Glucklauf-Sondershausen mines of the Wintershall concern within a short time. Finally, Kali-Chemie A. G.—which recently united the interests of the Rhenania-Kunheim company, of Berlin, and the Neustassfurt-Friedrichshall concern—is going into production of a mixed fertiliser on the basis of the former's Rhenania phosphate and the latter's potassium chloride.

The potash law credits 229 potash shafts with production quotas. Of these, 121 shafts (and 8 special factories) are voluntarily closed without loss of their production quota until 1953. The closed shafts control 52.81 per cent of the quotas entering Germany's total potash production. Of the remaining 108 works, about 60 operated in 1928 with 48 in reserve.

Production quotas on January 1, 1929, were divided among the existing potash concerns as follows:

	Thousandths
Kali-Industrie A. G.—(Wintershall)	384.86
Salzdetfurth group	210.70
Burbach group	164.18
Preuss, Bergwerks-und Huetten A. G.	59.70
Kali-Chemie A. G.	42.30
Anhaltische Salzwerke G. m. b. H.	31.31
Einigkeit group	28.72
Wilhelm Sauer group	25.25
Mansfeld	22.63
Deutsche Solvay Works	22.29
Roechling group	6.82
Special factories (Harburg, Stassfurt, and Merck)	1.24

This emnueration shows the relative importance of the German potash producers. Kali-Chemie, as previously noted, is a new formation combining Rhenania-Kunheim and Neustassfurt-Friedrichshall. Einigkeit sold its quotas some years ago to the so-called "Anti-Bloc," led by the Salzdetfurth group, then opposing the efforts of Wintershall (Kali-Industrie A. G.) to dominate the Syndicate; by the law, however, Einigkeit is nominally assigned its quota until 1953. Mansfeld quotas likewise were sold to the Salzdetfurth group and Roechling quotas to Salzdetfurth alone. The special factories do not mine potash but purchase stocks under an arrangement prescribed by the Potash Law.

German potash production in 1928, which was in excess of actual sales, amounted to 1,691,000 metric tons K_2O. Concentration and technical improvement of operation in the works are credited with increasing production capacity threefold, compared with the 1913 figure. The number of muriate plants has declined from 70 before the war to 31 at present but their production has increased threefold.

The numbers of workers in the German potash industry on January 1, 1929, totalled 21,782, against 21,832 on January 1, 1928, and a decline of 30.61 per cent from the pre war- number. Wages were raised on July 1, 1928, by an average of 9½ per cent.

Chemical Facts and Figures

Foreign Commissioners of Commerce Department Hold Paris Conference

Chemical Advisory Committee Sends Representatives To Meeting Recommended By It—Trade Association Executives Also Present—Charles C. Concannon To Officiate As Chairman.

Government representatives in the foreign service handling chemical matters hold a conference in Paris, the first week in August, under the direction of Charles C. Concannon, chief, Chemical Division, Bureau of Foreign and Domestic Commerce. This is the conference which was recommended by the Chemical Advisory Committee, whose representatives to it include A. Cressy Morrison, Dr. A. S. Burdick, Gustavus Ober, Jr., and Ernest T. Trigg.

Charles C. Concannon
Chief, Chemical Division
Bureau of Foreign and Domestic Commerce

Government representatives to the conference include W. T. Daugherty, Berlin; Dr. J. Reagan, Paris; H. S. Fox, London; E. Humes, Rome; Clayton Lane, Warsaw, and C. E. Lyon, Berne. Among division chiefs from Washington attending the conference is L. Domeratzky, chief, Division of Regional Information, and author of the Department of Commerce publication, "The International Cartel Movement."

Among the trade association executives attending the meeting are Dr. L. H. Marks, executive secretary, Industrial Alcohol Institute, and Charles D. Brand, executive secretary-treasurer, National Fertilizer Association.

The purpose of the meeting is to bring together those foreign officers of the Department of Commerce in Europe who are specializing in chemical matters to the end that the department may render the highest degree of service possible. The commercial attaches and trade commissioners stationed in Europe have met in years past to discuss matters of general interest, but this is the first time that any group of foreign service officers has convened to discuss the problems of any specific industry. Depending upon the success of the present meeting it is anticipated that the present conference may be repeated annually.

Marley Chemical Co. Plans to Manufacture Cellulose Acetate

Marley Chemical Co., New York, announces the acquisition of a plant at Elizabeth, N. J., and the beginning of the manufacture of cellulose acetate solution. The plant will be operated under the direction of Cecil Davis, formerly chief chemist, Miner-Edgar Chemical Co. In addition to cellulose acetate, the company plans production of related solvents and a general line of thinners. During the past year, the company has acted as a distributor featuring alcohol, methyl acetone and methanol. Officers are Zealy Gerger, president; Marvin Leeds, treasurer; and M. A. Connolly, secretary.

General Chemical Sues Selden Co. For Alleged Patent Infringement

General Chemical Co. brings suit against The Selden Co. in the Western District of Pennsylvania for an alleged infringement of their United States Patent 1,371,004 for sulfuric acid contact masses, which patent covers a slight modification of the thirty-year old deHaen vanadium contact mass., U. S. Patent No. 687,834.

The Selden Co., in a public statement, announces "that it will give full protection to users of its contact sulfuric acid processes and contact masses and that the present and future licensees of The Selden Co. may be sure that their interests will be protected by all of the resources of The Selden Co. in accordance with the broad guarantees which it gives and will continue to give to all its licensees, against any attacks by the General Chemical Co. or by any others."

Lazote Becomes Du Pont Ammonia As Du Pont Secures Entire Control

E. I. du Pont de Nemours & Co., Inc., secures complete control of Lazote, Inc., through the acquisition of the minority interest of 22,500 shares through the issuance of 10,713 shares of du Pont common stock. The Lazote plant manufacturing synthetic ammonia is located at Belle, W. Va., and is one of the only three in the country manufacturing nitrogen products from the air, the other two being the plants of American Cyanamid Co. and the Atmospheric Nitrogen Co.

Lazote, Inc., Wilmington, changes name to Du Pont Ammonia Corp., as of August 1, following announcement of the acquisition of minority interest in Lazote by E. I. du Pont de Nemours & Co.

The Du Pont Ammonia Corp. at the same time announced its entrance into the field of the production of synthetic methanol.

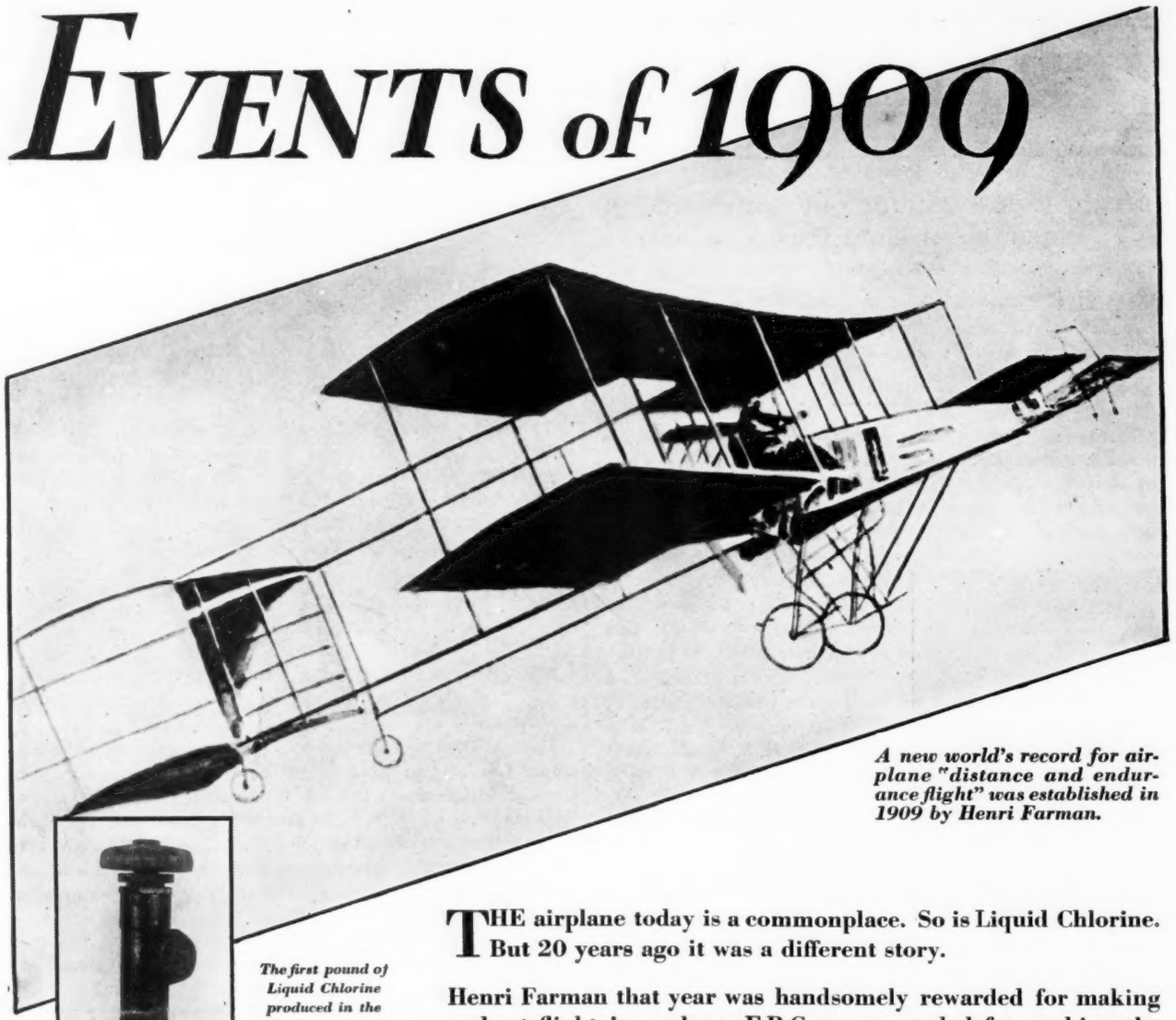
Multiple System Responsible for Refrigerant Fatalities

Multiple systems of household refrigerator installations and not the refrigerant itself, are primarily responsible for fatalities in Chicago, caused by the inhalation of methyl chloride, according to Dr. Arnold Klegel, Commissioner of Health, Chicago. He points out that while the individual home unit refrigerator is safe because it operates under such a low pressure that fatalities would be unlikely to occur even in the event of a leaky connection, the apartment house units operating from a central system are greater dangers. In New York, the danger of the multiple system has been recognized and its installation forbidden in apartment houses.

Virginia Cellulose Co. is Merged With Hercules Organization

Plant of Virginia Cellulose Co., Hopewell, Va., which has operated as a separate unit of the Hercules Powder Co., Wilmington, for three years, is merged with the general Hercules organization. This plant has been supplying the latter with nitrocellulose made from cotton linters. Under the merger, its operations will be expanded through allocation of Hercules research facilities for its development.

EVENTS of 1909



A new world's record for airplane "distance and endurance flight" was established in 1909 by Henri Farman.

The first pound of Liquid Chlorine produced in the U. S. A., 1907

Over 20 Years Ago E B G Pioneered in the Manufacture of Liquid Chlorine.

THE airplane today is a commonplace. So is Liquid Chlorine. But 20 years ago it was a different story.

Henri Farman that year was handsomely rewarded for making a short flight in a plane. E B G was rewarded for making the first Liquid Chlorine by having it accepted by the textile industry and put to better bleaching.

The passing of time has seen the adoption of Liquid Chlorine by other great industries. E B G has gone steadily forward, maintaining quality and enlarging facilities to care for the constantly increasing demand.

In excellence of product, value of cooperation, celerity of service and responsibility of organization, E B G offers real advantages to users of Liquid Chlorine.

Liquid Chlorine

EBG

Electro Bleaching Gas Co.

PIONEER MANUFACTURERS of LIQUID CHLORINE

MAIN OFFICE:
9 East 41st St., New York
PLANT:
Niagara Falls, New York

Personal and Personnel

Walter R. Andrews, assistant sales manager, Merrimac Chemical Co.; Benjamin E. Beale, chemical engineer, E. I. du Pont de Nemours & Co., Inc.; Alexander R. Bergen, secretary, Commercial Solvents Corp.; and William S. Brackett, assistant chemical engineer, Carbide & Carbon Chemicals Corp.; are among new members of the Chemists Club, New York.

Dr. Arthur D. Little delivers his presidential address before the annual meeting of the Society of Chemical Industry on the subject of "Science and Labor." He is presented with the honorary degree of doctor of science from the University of Manchester and Honorary Associateship in the Manchester College of Technology.

W. H. Matthews, president, Forest Products Chemical Co., Memphis, and the Mississippi Chemical Co., Charleston, is elected president, Newberry Lumber & Chemical Co., Newberry, Mich., capitalized at $5,000,000. Company's distillation plant has capacity of 160 cords per day and it is planned to install the Suida process.

Charles J. Brand, executive secretary, National Fertilizer Association, is a delegate to the fifth congress of the International Chamber of Commerce, in Amsterdam, Holland, July 8 to 13. He will also address the conference of American commercial attaches located in Europe, which will take place in Paris, July 29 to August 3.

Jasper E. Crane, chairman of the boards, Lazote, Inc., and National Ammonia Co.; Willis F. Harrington, general manager, dyestuffs division; and J. Thompson Brown, general manager, explosives department; are elected vice-presidents, E. I. du Pont de Nemours & Co., Inc.

W. D. Huntington, vice-president, Davison Chemical Co., upon his retirement as chairman, soil improvement committee, National Fertilizer Association, is presented by the association with a bound volume containing personal letters of appreciation for his thirteen years' service in that capacity.

Herman A. Metz prizes to pupils of Textile High School, New York, are awarded this year as follows: batik and dyeing prizes to Giovanna Nicotina and Mary Bekoff; chemistry and dyeing prizes to Matthew Rothman and Alfred Szabo.

Dr. Bueb, chairman, German Nitrogen Syndicate, and prime mover in the negotiations brought to a conclusion by the international nitrogen agreement, retires from the position to be succeeded by Dr. Heinrich Oster, chief of the I. G.'s Leunawerke.

Benjamin H. Brewster, 3rd, second vice-president, Baugh & Sons Co., Baltimore, is appointed by the governor a member of the Maryland aviation committee.

John A. Stoner, since 1920, adviser to William Zinsser & Co., New York, shellac, retires at a testimonial dinner given in his honor June 26.

Charles H. MacDowell, president, Armour Fertilizer Works, is named an officer of the Legion of Honor in recognition of his services to the French people during the World War.

William A. Hart, director of advertising, E. I. du Pont de Nemours & Co., is elected vice-president, National Better Business Bureau.

W. D. Rial, for the past six years superintendent, Wilmington, Cal., refinery, Pan American Petroleum Co., resigns August 1.

I. G. and Standard Oil Reach Co-operative Working Agreement

I. G. Farbenindustrie and Standard Oil Co. of New Jersey are reported to have reached a working agreement, the most immediate effect of which is the utilization of the I. G.'s hydrogenation patents by the oil company. The Standard Oil Co. of New Jersey has begun construction of a plant for the hydrogenation of residual petroleum oil and heavy crude petroleum at its refinery at Bayway, N. J. This process, originated by the I. G. and developed by the Standard company, is reported to give a 100 per cent yield of oil suitable for use as motor fuel from heavy petroleum. The best technical information is that the yield is approximately 100 per cent, but that two portions of the product are diesel oil and lubricating bases.

It is expected that the hydrogenation plant at Bayway will be in operation near the first of 1930. It will have a capacity of 5,000 barrels a day. Two other plants of like capacity are planned, one at the refinery of the Humble Oil & Refining Co., Baytown, Texas, the other at the Baton Rouge refinery of the Standard Oil Co., of Louisiana. Both are expected to be completed by the middle of next year.

The working agreement is said to include full co-operation in research and the development of synthetic products including rubber, and fatty acids from alcohol; support financial assistance to the I. G. by the oil company; co-operation in erection of plants for synthetic nitrogen production; complete liberty of action for the I. G. in its domestic market; and all the advantages to the I. G. of any developments achieved independently by Standard Oil in the field of oil synthesis.

National Acetate Silk Co. Formed

National Acetate Silk Co., Inc., the result of an arrangement between the American Chatillon Corp. and the Tubize Artificial Silk Co. of America, is incorporated in Delaware with capital of $10,000,000 and 300,000 shares no par. Dr. D. M. Balsam has been elected to the board of Tubize in accordance with the formation of the new firm.

Obituaries

Jacob Publicker, founder, Publicker Commercial Alcohol Co., Philadelphia, dies at his home in Atlantic City, July 7, aged 76. He was born in Russia and came to this country in 1891. Two years later he organized the alcohol companyof which he was the active head until a few years ago when he turned it over to his sons.

Christian Rodenburg, one of the pioneers in the distillation industry in the Middle West, dies at his home in Cincinnati, July 8, aged 85. He was a veteran of the Civil War and after the war became associated with the Duckworth Distilling Co. In 1880 he established the Rodenburg Brothers' distillery in Lawrenceburg, Ind., which was later merged with the Greendale Industrial Alcohol Co.

E. J. Kerns, chemical engineer in the production department, American Cyanamid Co., dies at his home in Larchmont, N. Y., July 16, aged 46. He had been with the American Cyanamid Co. for the past eighteen months, and was previously associated with Air Reduction Co.; National Carbide Co., Ivanhoe, Va.; and Canada Carbide Co., Shawinigan Falls, Que.

Edwin C. Stevens, president, Boston Molasses Co., dies at Salisbury, Vt., July 23, aged 72.

Sulphuric Acid

60° and 66° Commercial
66° Textile Clear Electrolyte

Prompt Shipment—Any Quantities
In Tank Cars, Drums or Carboys

Copper Sulphate

Granular, Large, Medium and
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95-97% PURE AND DENATURING
METHYL ACETONE

WOOD PRODUCTS CO.
REFINERS OF METHANOL
BUFFALO NEW YORK

News of the Companies

Union Solvents Corp. is organized by Ohio and New York interests to operate under a new process for the production of butyl alcohol, acetone and related products. Corporation has authorized capital of 25,000 shares of preferred stock and 100,000 shares of common. It starts with $1,000,000 paid in capital. Bernard E. Pollak and Jules Carter, New York, are leading figures in the organization which has acquired a plant at Carthage, Ohio, from the Rossville Commercial Alcohol Co.

United Chemicals, New York, which holds a controlling in, terest in Westvaco Chlorine Products, purchases over 97 per cent of the capital stock of Monarch Chemical Co., New York, manufacturer of baking powder. The latter has factories in Brooklyn, Chicago, and San Francisco and purchases a large portion of its chemical raw materials from Warner Chemical Co., subsidiary of Westvaco.

American I. G. Chemical Co. announces that it has no negotiations whatever pending for a plant in Louisiana. This denial was in answer to reports concerning negotiations expected to lead to construction of $20,000,000 plant by the company at Monroe, La., for the manufacture of dyes and the application of the hydrogenation process to the refining of petroleum.

U. S. Industrial Alcohol Co. takes title to Kentucky Alcohol Corp. as of July 26. The announcement was also made that Sid Klein, formerly vice-president of Kentucky, has been named as a vice-president of the U. S. Industrial Alcohol Co. Practically the entire personnel of the Kentucky organization goes with him into the new connection.

Stockholders of American Cyanamid Co. and Kalbfleisch Corp. approve reorganization through consolidation of latter's assets with that of former company. Kalbfleisch Corp. will continue to operate as a separate organization and no change in management is contemplated.

Hooker Electrochemical Co., leases space for its executive offices in the new Lincoln building, New York, which will be ready for occupancy February 1930.

Calco Chemical Co. announces closing of factory and main office for two weeks—August 10 to 24—while employees take their annual vacation.

Alex C. Fergusson Co., Philadelphia, publishes folder entitled "Little Journeys into Great Industries," which shows some of the important uses of sodium silicate.

Truempy, Faesy & Besthoff, Inc., New York, are appointed Eastern selling agents on copperas for Republic Iron & Steel Co., Youngstown, Ohio.

Graesser-Monsanto Chemical Works, Ltd., acquires methyl salicylate division of K. B. Mavlankar.

Allied Chemical & Dye Corp. announces that Lloyd Van Doren is now associated with its patent division.

Croton Chemical Corp. announces removal to 111 John st., New York.

Roessler & Hasslacher Chemical Co. is appointed selling agent for the United Feldspar Corp.

Imperial Chemical Industries, Ltd., names F. A. Freeth and William Rintoul as joint research managers.

American Cyanamid Completes Acquisition of Selden Company

American Cyanamid Co. completes arrangements for the acquisition of the Selden Co., Pittsburgh. The latter company's assets, business, good will, and patents will be acquired outright by American Cyanamid which will turn over to the Selden stockholders 165,000 shares of its B common stock, equivalent to about $9,000,000. This latest acquisition brings under the centralization plan a source of a number of organic intermediates used by Cyanamid. The Selden Company has specialized in phthalic anhydride and anthraquinone. It also manufactures a special contact process for use in the production of sulfuric acid.

This is the third of Cyanamid's recent acquisitions, the two previous being the Calco Chemical Co. and the Kalbfleisch Corp. The former subsidiary has acquired four companies recently, while the latter company acquired John C. Wiarda & Co., shortly before being taken over by Cyanamid.

Calco Makes Fourth Acquisition Securing May Chemical Works

Calco Chemical Co., Inc., Bound Brook, N. J., acquires May Chemical Works, Newark, N. J., specializing in the manufacture of red for Lake C, Permaton orange and Permaton red. Operations at the May plant will continue under the direction of Dr. May, but orders and inquiries will be handled through the Calco organization.

This is the fourth of Calco's recent acquisitions. The srhote to date include the Crown Chemical Co., Keyport, N. J., coal tar intermediates; sulfur dioxide division, King Chemical Co., Bound Brook; and Textile Chemical Co., Providence, specializing in alpha naphthol, naphthol yellow c. i. No. 10, azo yellow, fast light yellow, and benzo fast red.

Cuban Senate Passes Bill To Restrict Molasses Exports

Bello bill, containing plan of Cuban Government to restrict exports of molasses, is passed by Cuban senate. The house had already adjourned until November, and no further action will take place on the bill, until the Cuban house reconvenes at that time. The bill provides a tax of 1½ cents per gallon on all molasses exported from Cuba, regardless of grade, with an additional tax of ½ cent for each 1 cent of increase in price over 8 cents per gallon, and there is a further provision enabling the president, in his discretion, to set up machinery to regulate production and export of molasses and to restrict export to a limited amount if necessary.

Rubber group, Chicago section, American Chemical Society, is organized with following officers: chairman, Dr. Carl Frick, Van Cleef Bros.; vice-chairman, Otto Urech, Inland Rubber Co.; and secretary, Ben W. Lewis, Wishnick-Tumpeer, Inc. All interested in joining this group should forward their names to the secretary.

Mississippi Laboratories, Inc., is organized in Jackson, Miss., to deal in chemicals. Officers are president, W. T. Pate; vice-president, A. H. Alvis; secretary-treasurer, J. D. Noble, and plant manager, V. B. Rogers.

United Africa Co., capitalized with 10,000 shares no-par stock, is incorporated in Delaware to consolidate the American interests of the African & Eastern Trading Corp. and the Niger Co., palm oil importers.

Parsons Ammonia Co., Inc., announce's removal to 233 Broadway, New York.

General Paint Corp. announces acquisition of L. S. Finch Chemical Co., Los Angeles.

AERO BRAND ETHYL LACTATE

(SYNTHETIC)

Solves "Blushing" Problems

Aero brand Ethyl Lactate is an exceptionally effective solvent for use with nitrocellulose lacquers, providing a proper solvent balance throughout the drying period. It evaporates gradually and at an even rate, thereby eliminating "blushing".

Ethyl Lactate with the Rezyl and Rezyl Balsam series of synthetic resins, permits a higher solid content in nitrocellulose lacquers without increasing the viscosity.

The use of Rezyls in this way imparts unusual outdoor durability.

Use the coupon and let a trial drum of Ethyl Lactate prove its special value in your production.

Other Industrial Chemicals supplied by the American Cyanamid Company include:

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Copper Cyanide
Copper Sulphate
Cresylic Acid
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Diphenylguanidine
Ethyl Lactate
Ethyl Oxybutyrate
Formic Acid
Hydrocyanic Acid, (Liquid)
Red Prussiate of Potash
Rezyls
Rezyls Balsams
Sodium Cyanide
Sodium Phosphates (Di and Tri)
Sulphocyanides (Thiocyanates)
Sulphur
Sulphuric Acid
Teglac
Thiourea
Urea
Yellow Prussiate of Potash
Yellow Prussiate of Soda
Zinc Cyanide

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Industrial Chemicals Division

AMERICAN CYANAMID COMPANY

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American Cyanamid Company
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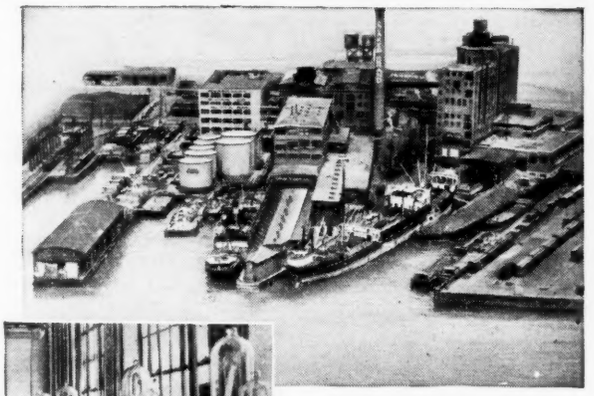

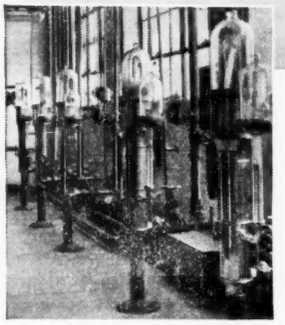

Part of our up-to-date equipment, showing a battery of tail boxes in operation.

QUAKER BRAND Alcohol

For dependable alcohol... look to this model plant

WHEN you order Quaker Brand Industrial Alcohol, you can count on uniform quality. Every gallon of it is made in this modernly equipped plant. Every manufacturing process is supervised by chemists with long years of experience.

Customers marvel at the efficient, spotless equipment. Come. See it for yourself. There are no secrets. You will see the entire manufacturing process, from our own molasses to the finished alcohol.

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Sales representatives and warehouse stocks in principal cities.

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American Chemical Society Plans Minnesota Meeting

American Chemical Society will hold its seventy-eighth meeting at the University of Minnesota, September 9-13. The program as completed thus far includes a symposium September 10, Prof. H. S. Taylor, chairman, on the subject of "Chemical Activation by Light and by Ionizing Agents." Speakers will include Dr. Cyril Hinshelwood, Dr. Max Bodenstein, Dr. N. Polanyi, and Dr. O. Bonhoeffer. Another symposium will be held September 11, Bruce K. Brown, chairman, on the subject of "Industrial Fermentation."

The presidential address will be made on the evening of September 11 by Dr. Irving Langmuir, who will discuss "Modern Concepts in Physics and their Relation to Chemistry." Following the address, the Priestly medal will be presented to Francis P. Garvan "for distinguished service to chemistry."

Five Claims Allowed on Sulfur Mining Patent

Five claims of Wilber Judson relating to a process for the maintenance of balanced hot-water pressure in the mining of underground sulfur deposits have been allowed by the board of appeals of the Patent Office.

The five claims which were allowed by the board set forth Mr. Judson's invention of maintaining a predetermined or balanced pressure by withdrawing cold water from the lower part of the deposit and hot water from the upper part and the re-introduction of the withdrawn hot water.

MacLac-Kasebier-Chatfield Formed by Shellac Merger

MacLac-Kasebier-Chatfield Corp. is organized in New York by merger of interests of Kasebier-Chatfield Shellac Co. and the Mac-Lac Co. Officers are as follows: chairman of the board, Frank F. McClintock; president, Frederick Kasebier; vice-presidents, Harry T. McClintock and Harry S. Chatfield, who is also sales manager; treasurer and purchasing agent, Ralph W. McClintock; secretary, William A. McClintock.

American Gum Importers' Association appoints following to board of arbitration: H. E. Hendrickson, M. Fried, T. Jay France, J. M. Young, A. J. Wittenberg, George H. Lincks, W. Jealous, S. Van Gelden, J. W. Bush, P. S. Busschaert, M. D. Van Norden, and Otto Gross.

Howard Elting, formerly with the Glidden Co., the Heath & Milligan Manufacturing Co., and the Adams & Elting Co., is appointed treasurer, Chadeloid Chemical Co., succeeding his cousin, the late Philip Elting.

E. I. du Pont de Nemours & Co., Inc., announces new line of sulfur colors with controlled copper content. Two of the new colors are Sulfogene Carbon H. Conc. CF and Sulfogene Fast Green BCF.

Agfa Ansco Corp., Binghamton, N. Y., announces plans to replace cellulose-nitrate Z-Ray film with acetate film to comply with state health regulations.

Dunbar Molasses Corp. leases space for executive offices on the forty-third floor in the new Chanin Building, New York.

Major-General Amos A. Fries, until recently chief, Chemical Warfare Service, retires from the army.

Lester Kirschbaum, director of research, is made a vice-president, Flintkote Corp.

International Nitrogen Cartel Plans to Establish Sales Quotas

International nitrogen cartel plans to establish sales quotas for all important export markets as well as promote the use of nitrogen in agriculture through price control and joint advertising.

The original set-up of this cartel included the I. G. Farbenindustrie and Imperial Chemical Industries as producers of synthetic nitrogen, as well as the producers of natural nitrate of soda in Chile. It is now stated that the Comptoir de l'Azote, representing the French, and the Montecatini Company, representing the Italian nitrogen interests, are negotiating for entry.

The productive capacity of the original participants alone, together with that of Norwegian producers of synthetic nitrogen and producers of by-product ammonium sulfate in Germany and Britain who already work in agreement with the group, is estimated to represent about 70 per cent of the world's nitrogen production.

Midwest Carbide Formed by National Lead and Shawinigan

Midwest Carbide Corp. is organized by National Lead Co. and Shawinigan Products Corp., New York, to manufacture calcium carbide at Keobuk, Iowa. This has heretofore been conducted by United Lead Co., subsidiary of National Lead. Product of the new company will be distributed by Shawinigan Products Corp., which has acted in the same capacity for the United Lead Co. for past several years. Officers are as follows: president, E. J. Cornish, president, National Lead Co.; vice-president and general manager, L. F. Loutrel, vice-president, Shawinigan Products; and vice-president in charge of production, T. F. Wettstein.

Texas Gulf Sulphur Holdings Taxed on $9,000,000 Basis

Texas Gulf Sulphur Co's, holdings at Boling Dome are appraised as having taxable value of $9,000,000 against the figure of $4,000,000 previously rendered by the company. County commissioners held that the total value of the company's property at Boling Dome was $27,000,000, of which the value of the lease was placed at $7,500,000; improvements, $4,000,000; royalties, $8,000,000; and sulfur, $7,500,000. A fair taxable basis was held to be one-third of the total valuation.

Borden Co., milk and milk products, New York, buys the Casein Co. of America and its subsidiaries in the United States, Canada and Europe. Fifty-two concerns have been acquired by the Borden Co. as a result of recent transactions in connection with its expansion program.

F. W. Berk & Co., London, drugs and chemicals, announces purchase of plant site in New Jersey. It is understood that the company plans to erect a plant in this country and that its business here will be conducted by F. W. Berk & Co., Baltimore, incorporated about three months ago.

B. G. Slaughter, plant manager since 1923, is elected president, Tubize Artificial Silk Co. of America. Other officers are vice-presidents, E. F. Peters, G. A. Hardwick, and J. E. Bassill; secretary-treasurer, E. P. Van Vliet.

Charles H. Stone, Charlotte, N. C., manufacturers' representative of dyestuffs and chemicals, plans formation of a chemical merchandising organization to own and occupy its own offices, warehouse and laboratory.

Dr. A. D. Westman, formerly associate professor, of ceramics, Rutgers University, is appointed director of chemical research, Ontario Research Foundation.

R. W. Greeff & Co., Inc.

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Formic Acid 90%

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CLEVELAND, OHIO.

Dye Sales Agreement Signed by German, French and Swiss

New International Dye Cartel's Exports Reached Total Value of $93,800,000 In 1928—Participants Include the I. G., Kuhlmann, Societe des Materieres Colorantes and the Swiss Basler I. G.

Formal signing of a sales agreement, with regulation of prices in prospect, constitutes the outstanding recent development in the affairs of the international dye cartel, participated in by the chemical manufacturers of Germany, France and Switzerland. Value of dyes exported by the combination in 1928 was $93,800,000 as compared to $73,200,000 in 1927 and $65,000,000 in 1926.

The sales agreement, it was stated, according to the information received by the Department of Commerce makes permanent the plan which has been worked out by the participating companies over the period of the last four years.

Although no details have been made available regarding the plan to regulate prices it has been said that the companies believe that the consumers throughout the world will be benefited by the economies derived from the common effort.

This agreement was signed by the three European countries, whose export trade in coal-tar dyes in 1927 accounted for more than three-quarters of the quantity of the world's exports and four-fifths of the value. The significance lies, however, in the fact that the signatures gave permanency to an oral agreement which had been in effect for the past three or four years by enlarging and reducing to writing. In other words, it was the conclusion of negotiations lasting the past five years.

The participants were the German I. G. Farbenindustrie, the French dye firms —Etablissements Kuhlmann and the Societe des Matieres Colorantes de Saint Denis—and the Swiss Basler I. G. The Swiss Basler I. G. comprises the A. G. fuer Chemische Industrie (Ciba), Chemische Fabrik Vormals, Sandoz, which is closely connected with the A. G. fuer Chemische Industrie, and J. R. Geigy, A. G.

It is understood that the Clayton Aniline Co., the English subsidiary of Ciba, which has consistently increased its sales in spite of competition from other English chemical companies, will operate under the terms affecting its parent company. Other subsidiaries of Ciba which are said likewise to be affected are the French subsidiary at Saint Fons, the Polish subsidiary, S. A. Pabiancoise pour l'Industries Chimique, and the Italian subsidiary, the Sta. Bergamasca per l'Industriea Chimica, Seriate.

The agreement, which was brought about by present market conditions, refers exclusively to co-operation in the sale of aniline and other synthetic dyes —especially synthetic indigo. Each country retains its independence as to capitalization, profits, and commercial development.

Much emphasis is laid upon the preservation of independence in technical and commercial details. Though the agreement is referred to as a sales agreement, it is in reality an agreement for regulating and stabilizing the prices of the standard dye products.

Although the details have not been made public, authoritative sources give the following as the basis of the accord:

The fixation of prices in the various markets in such a way as to obtain an average return for the adherents, after taking into consideration the factors of quantity and quality, transportation charges, services, etc.

The establishment of export quotas for the three participants.

The continuation of Franco-German collaboration as regards sales and the continued used of common sales bureaus, particularly in the east, with the Swiss maintaining their independent sales organizations.

The periodical readjustment of the participation of the adherents in the major market regions.

The exchange of information on methods of production and utilization of dyes in various industries.

There is no indication of a pooling of profits.

No details have been made available regarding the plan to regulate prices, other than the statement that it is believed that consumers throughout the world will benefit by economies to be derived by a common effort to improve packing and to rationalize distribution by effecting more direct deliveries.

The French and German export quotas have been altered to take account of the Swiss sales. The 1927 agreement allotted 80 per cent to Germany and 20 per cent to France. At that time, when the participation of England was under consideration, the quotas drafted were 75 per cent for Germany, 12 per cent for France, and 13 per cent for England. During the negotiations in the fall of 1928 the tentative quotas for Germany, France, and Switzerland were understood to be 70, 20 and 10 per cent, respectively. It is doubtful, however, whether France was able to maintain its demand for this ratio, and it is believed that the sales made since September, 1928, have been more nearly on the basis of 75 per cent for Germany, 17 per cent for France, and 8 per cent for Switzerland. No official statement has confirmed these percentages, but it is believed that they approximate the present division of export sales under the agreement just signed.

Shawinigan Chemicals Occupies Prominent Position in Canada

Shawinigan Chemicals, Ltd., is now recognized in the United States and Great Britain, as well as in Canada, as an outstanding organization in its line. Formed early last year as a merger of Canada Carbide, Ltd., and Canadian Electro Products Co., Ltd., the present company has been steadily expanding until it now occupies an important position in the chemical industry, says the "Wall St. Journal."

Closely allied with Shawinigan Chemicals is its new subsidiary, Shawinigan Stainless Steel & Alloys, Ltd., which started operations early last month. This company is the first in Canada to devote itself exclusively to the manufacture of alloy steel casting of all descriptions.

In the United States, Shawinigan, in conjunction with National Lead Co., has organized the Midwest Carbide Corp., which will manufacture calcium and conduct the business heretofore handled by United Lead Co., a subsidiary of National Lead. This new company will have the benefits of counsel from Shawinigan's technical staff.

Canadian Industries, Ltd., takes over the old sulfuric acid plant, formerly occupied by Mond Nickel Co. at Coniston, Ont., and later absorbed by International Nickel Co. of Canada, and is now engaged in experimental work preparatory to establishment of the company's proposed larger plant at Copper Cliff. The sulfuric fumes are to be used in the manufacture of sulfuric acid, which is to be the base of several other products, including nitre cake.

Eastman Kodak Co. is said to be negotiating for a working agreement with the Glanzstoff and Bemberg rayon concerns, both of which are said to have large interests in the Eastman Kodak Co. The latter is believed to be planning the erection of a large cellulose acetate plant.

Silica Gel Corp.'s basic patent is upheld by German patent court of appeals and a patent issued to the company, thus ending litigation.

Riverside Chemical Co., North Tonawanda, N. Y., purchases new factory in which it will locate production and distribution headquarters.

Chemical Sales Corp., Buffalo, opens sales office in Rochester with Ralph H. Walker in charge.

Interstate Chemical Co., Jersey City, insecticides and fungicides, takes over the Danforth Chemical Co., Leominster, Mass.

A Typical Series of *Eastman Organic Chemicals*

Substance	*Boiling Point*
Methyl Formate	32°
Methyl Acetate	57°
Methyl Propionate	80°
Methyl n-Butyrate	102°
Methyl n-Valerate	127°
Methyl n-Caproate	150°
Methyl n-Heptylate	172°
Methyl n-Caprylate	193°
Methyl Pelargonate	214°
Methyl n-Caprate	224°
Methyl Laurate	141° (15 mm.)
Methyl Myristate	168° (15 mm.)
Methyl Palmitate	196° (15 mm.)
Methyl Stearate	215° (15 mm.)

The above list of methyl esters is only a sample of the various homologous series which may be chosen from Eastman Organic Chemicals. In such a series, the solvent properties, optical characteristics, physical constants, etc., usually change regularly from one member of the series to the next. If you are using for any purpose chemicals which fall short in their desired properties, it will pay to investigate other members of the same series.

Eastman Kodak Company, *Chemical Sales Department*
345 State Street, Rochester, N. Y.

Gentlemen:

Please send me, free, List No. 20 of Eastman Synthetic Organic Chemicals.

Name----------

Street and Number----------

City and State----------

The Pennsylvania Salt Manufacturing Company

of Philadelphia

announces the purchase of the process and plant for the manufacture of

Ammonium Persulphate

formerly owned by

The North American Chemical Company,

Bay City, Michigan

This equipment has been transferred to their Wyandotte, Michigan plant, and is now being operated in charge of the people formerly at Bay City.

THE PENNSYLVANIA SALT MANUFACTURING COMPANY

solicits orders through its regular representatives

The Financial Markets

E. I. du Pont de Nemours Reports Six Months' Net of $41,536,412

Nets $3.84 Per Share As Compared With $3.23 For Corresponding Period of 1928—U. S. Industrial Alcohol Nets $5.30 Per Share Against $3.71—International Salt Profit Up.

Report of E. I. du Pont de Nemours & Co. for six months ended June 30, 1929, shows consolidated net income of $41,536, 412 after interest, federal taxes, etc., equivalent after debenture dividends, to $3.84 a share (par $20) earned on 10,068,281 average number of common shares outstanding during the period, and compares with $32,696,782 in first six months of 1928, equal to $3.23 a share on 9,315,803 common shares of $20 par value, the equivalent of the no-par stock then outstanding. Based on 10,311,768 shares of common stock outstanding on June 30, last, net income for first half of 1929, is equal to $3.75 a share, comparing with $2.92 a share, on same share basis in first half of 1928.

Consolidated net income for quarter ended June 30, 1929, was $16,296,567 after above charges, equal to $1.44 a share on 10,298,653 average common shares outstanding during the quarter, compared with $11,182,584 or $1.05 a share on 9,315,038 shares in second quarter of previous year. Calculated on the 10,311,768 common shares outstanding on June 30, 1929, net profit for June quarter is equal to $1.43 a share against 95 cents a share on same share basis in June quarter of 1928.

Earnings from operations for the three months were $9,477,322, compared with $5,950,244 in the corresponding period a year ago, and for the half-year operations earned $16,784,899, compared with $9,861,583 for the first half of 1928.

Profit and loss surplus on June 30, 1929, was $142,192,029 as compared with $124,472,266 on June 30, a year ago.

Total gross assets of the company are reported as $532,799,517; current assets as $112,035,674, including: cash, $20,989,304; marketable securities and call loans, $21,348,650; accounts receivable, $26,895,400; notes receivable $3,767,632, and inventories at cost, $39,034,686. Current liabilities are reported as $23,333,623.

A. Klipstein & Co., New York, for the year ended Dec. 31, 1982 reports: Assets: Furniture, fixtures, etc., $25,824; merchandise, $946,107; notes receivable, $29,998; accounts receivable, $560,097; cash, $101,057; investments, $170,240; patent rights and trade-marks, $100,669; deferred charges, $13,068; total, $1,947,060. Liabilities: Preferred stock, $460,700; common stock, $500,000; accrued accounts, $19,336; accounts payable, $638,370; notes payable and acceptances, $412,986; deficit (deduct) $84,332; total, $1,947,060.

U. S. Industrial Alcohol Co. reports for six months ended June 30, 1929, net profit of $1,696,051 after depreciation and Federal taxes, equivalent to $5.30 a share on 320,000 no par shares of common stock. This compares with $1,188,104 or $3.71 a share on same share basis in first half of 1928.

International Salt Co. and subsidiaries report for six months ended June 30, 1929, profit of $231,298 after fixed charges and sinking fund, but before federal taxes, comparing with $3,108 in first half of 1928. Stock outstanding amounts to 60,771 shares.

American Solvents & Chemical To Increase Capital For Expansion

American Solvents & Chemical Corp. plans increase in authorized capital from 160,000 to 500,000 shares of convertible preferred and from 320,000 to 1,250,000 shares of common stock, to provide for expansion of activities in the industrial alcohol field.

American Solvents & Chemical Corp. was the first company to result from a series of mergers in the industry and active negotiations are understood to have been under way in recent weeks looking toward the inclusion of the company in a larger consolidation. Estimated earnings, available for interest after depreciation for the current year are placed at approximately $1,400,000, against $513,000 in 1927, the first full year of operation for the company, and $890,000 last year. Application will be made to list the new stock on the New York Stock Exchange.

Monsanto Votes Two For One Split And Declares New Stock Dividend

Monsanto Chemical Works votes two-for-one stock, split-up. Company had issued 160,000 shares, the increase from 110,000 shares having been made December 31, 1928. Of the additional shares, 15,715 offered to stockholders at $50 to provide funds for purchase of entire control of Graesser-Monsanto Chemical Works. A 10 per cent stock dividend was declared in February, 1929, and another of 1½ per cent during the past month. This leaves about 20,000 of the unsplit shares not disposed of.

Monsanto Chemical Works declared initial quarterly dividend of 31¼ cents on new stock in addition to usual quarterly dividend of 1½% in stock, both payable October 1 to stock of record September 14.

Dow Plans 4 For 1 Split And 400 Per Cent Stock Dividend

Dow Chemical Co., plans to split the common stock four for one and declare a 400 per cent stock dividend, increasing authorized common to 1,000,000 no par shares from 200,000 no par shares. Company has outstanding 120,000 shares. Remaining stock of the authorized issue after split will be offered to stockholders at a subscription price and in a ratio to be announced later.

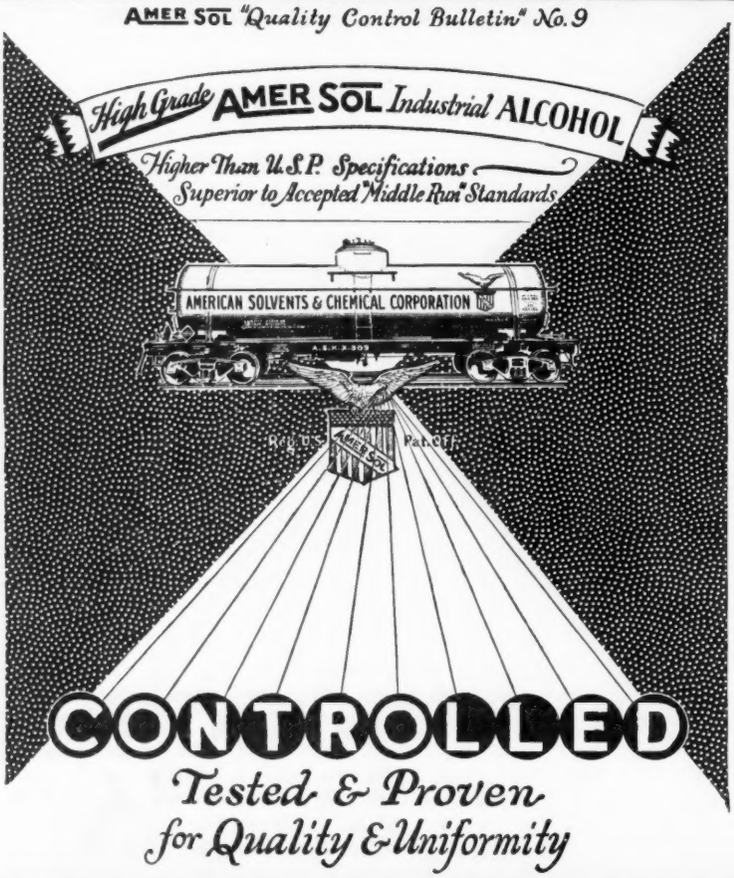
Company declared extra dividend of $1.00 and regular quarterly $1.50 on common and regular quarterly dividend of $1.75 on preferred, all payable August 15 to stock of record August1.

National Aniline & Chemical Co., Inc., for the year ended Dec. 31, 1928, reports: Assets: Fixed capital, net, $5,080,394; current assets, $1,192,278; investments, $116,300; other assets, $9,691,778; total, $26,816,750. Liabilities: Current liabilities, $13,556,142; reserves, $2,560,506; capital stock, $2,000,000; surplus, $8,700,102; total, $26,816,750.

Nichols Copper Co. declares regular quarterly dividend of 43¾ cents on Class A stock, payable October 1 to stock of record September 20.

Vanadium Corp. of America declares the regular quarterly dividend of 75 cents, payable August 15 to stock of record August 1.

AMER SOL "Quality Control Bulletin" No. 9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Standard Quality

Union Carbide & Carbon Corp. Reports $7,324,297 Quarter Net

Union Carbide & Carbon Corp. and subsidiaries report for quarter ended June 30, 1929, net profit of $7,324,297 after interest, taxes, depreciation and preferred dividends of subsidiaries, equivalent to 88 cents a share earned on 8,306,108 no-par shares of stock outstanding at end of period. This compares with $7,203,946 or $2.62 a share on 2,752,072 shares in preceding quarter and $5,868,610 or $2.20 a share on 2,659,733 shares in June quarter of 1928.

Net profit for first six months of 1929, totaled $14,528,243 after above charges, equal to $1.75 a share on 8,306,108 shares against $11,872,742 or $4.46 a share on 2,659,733 shares in first half of previous year.

Mathieson Reports Largest Second Quarter Earnings in History

Mathieson Alkali Works, Inc., reports for quarter ended June 30, 1929, net income of $610,697 after depreciation, depletion, federal taxes, etc., equivalent after 7% preferred dividend requirements to 96 cents a share on 588,328 no-par shares of common stock. The earnings for second quarter were largest in company's history. This compares with $506,675 or $3 15 a share on 147,082 common shares in preceding quarter and $556, 666 or $3.49 a share on 147,207 shares in June quarter of 1928.

Net income for first six months of 1929 totaled $1,117,371 after above charges, equal to $1.75 a share on 588,328 common shares against $986,130 or $6.11 a share on 147,207 shares in first half of previous year.

Air Reduction's Quarter Net Record

Air Reduction Co., Inc., for quarter ended June 30, 1929, reports net profit of $1,492,772, after depreciation, federal taxes, etc., equivalent to $1.97 a share earned on the 755,864 shares of no-par stock. Net profit for the June quarter was the largest in the company's history, and compares with $1,237,562, or $1.67 a share on 738,363 shares in preceding quarter, and $767,119, or $1.13 a share on 676,204 shares in second quarter of 1928.

For the first six months of 1929, net profit was $2,730,334, after federal taxes, etc., equivalent to $3.61 a share earned on 755,864 shares of stock outstanding on June 30, last. In preceding year, the company reported profit of $1,603,235 before federal taxes for first six months.

United Chemicals Reports Four Months' Net of $188,068

United Chemicals, Inc. for the period from March 1 to June 30 reports a net profit of $188,068 representing cash income only from dividends, not its share in the profits of subsidiaries. This is after provision for Federal taxes but is before preferred dividends. Current assets totaled $4,048,980 of which cash and call loans amounted to $3,495,549 and temporary investments $553,431.

Investments in controlled and operated companies total $10, 114,573. There are no liabilities excepting a deferred obligation on the purchase of preferred stock of one of the company's subsidiaries amounting to $405,625.

Industrial Rayon Corp. reports for six months ended June 30, 1929, net income of $693,598 after depreciation, interest and federal taxes, equivalent to $3.64 a share earned on 190,431 shares of no-par common stock. This compares with $680,333, or $3.57 a share in first half of 1928.

Net income for quarter ended June 30, amounted to $313,770 after above charges, equal to $1.65 a share comparing with $379,828, or $1.99 a share in preceding quarter.

Texas Gulf Sulphur Quarter Net at $1.40 Per Share

Texas Gulf Sulphur Co., Inc., reports for quarter ended June 30, 1929, net income of $3,571,270 after depreciation and federal taxes, but before depletion, equivalent to $1.40 a share earned on 2,540,000 shares of no-par stock. This compares with $3,880,260 or $1.53 a share in preceding quarter and $3,586,819 or $1.41 a share in June quarter of 1928.

Net income for first six months of 1929, totaled $7,451,530 after above charges, equal to $2.93 a share on common, comparing with $6,674,658 or $2.62 a share in first half of previous year.

During the last quarter the company increased its reserves for depreciation and accrued federal taxes, by $319,889, making total of these reserves $11,821,896 on June 30, 1929. All assets subject to depreciation in connection with company's operations at Gulf, Tex., are now entirely offset in these reserve accounts.

Westvaco Chlorine Products Reports Surplus of $504,265

Westvaco Chlorine Products Corp. reports for six months ended June 30, 1929, surplus of $504,265 after interest, depreciation, federal taxes and preferred dividends, equivalent to $2.52 a share on 200,000 no-par shares of common stock. This compares with surplus of $261,188 or $1.30 a share on above common shares in first half of 1928.

Surplus for quarter ended June 30, amounted to $262,249 after preferred dividends, equal to $1.31 a share on common comparing with $242,016 or $1.21 a share in preceding quarter and $144,822 or 72 cents a share in June quarter of previous year.

Statement as of June 30, 1929, shows current assets of $2,865, 771 and current liabilities of $140,115 comparing with $1,313,844 and $264,012 respectively on June 30,1928.

Westvaco Chlorine Products Corp. declared regular quarterly dividend of 50 cents on common, payable September 1 to stock of record August 15.

Freeport Texas Quarter Net Higher

Freeport Texas Co. reports for quarter ended May 31, 1929, net income of $1,136,482 after expenses and reserves for depreciation and taxes, equivalent to $1.55 a share earned on 729,844 shares of no-par stock. This compares with $737,037 or $1.01 a share in preceding quarter and $866,271 or $1.19 a share in quarter ended May 31, 1928. Net income for six months ended May 31, 1929, totaled $1,873,519 after above charges, equal to $2.56 a share, comparing with $1,271,431 or $1.74 a share in corresponding period of previous year.

National Distillers Products Corp. on August 26, will pay off and redeem all its 10-year 6½% guaranteed notes at 104¼ and accrued interest. Payment will be made upon presentation and surrender of the notes with all coupons maturing after the redemption date attached, at Equitable Trust of New York, 11 Broad Street on and after August 26, after which date, interest will cease.

New England Aniline Works, Inc., Boston, for the year ended Dec. 31, 1928, reports: Assets: Real estate, $239,658; machinery, $42,500; accounts receivable, $7,340; cash, $1; securities, $100,000; profit and loss, $28,822; total, $418,321. Liabilities: Preferred stock, $15,000; common stock, $350,000; mortgages, $52,500; accounts payable, $821; total, $418,321.

Atlas Powder Co. and subsidiaries for six months ended June 30, 1929, report net income of $1,194,726 after charges, depreciation and taxes, equivalent after dividends on 6 per cent preferred stock, to $3.54 a share earned on 261,435 no par shares of common stock. This compares with $974,869 or $2.70 per share in the first half of 1928.

The Industry's Stocks

1929 July 31 High	1929 July 31 Low	1929 High	1929 Low	1928 High	1928 Low	Sales In July	Sales Since Jan. 1	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1928	Earnings $-per share-$ 1927
								NEW YORK STOCK EXCHANGE					
177½	172½	181½	95½	99⅝	59	50,500	662,300	Air Reduction	No	683,873	$2.00	9 mo. 3.70	10.74
312	309½	346½	241	252½	146	69,600	507,600	Allied Chem. & Dye	No	2,178,109	6.00		10.03
122	122	125	120½			1,200	16,900	7% pfd.	100	392,849	7%		62.59
12⅞	12⅞	23⅝	10½	26	15⅝	11,500	159,500	Am. Agricultural Chem.	100	333,221	...		1.59
47½	47½	73⅝	40⅝	79⅞	55⅝	6,800	106,500	pfd.	100	284,552	...		7.86
162⅝	157⅛	169	107⅜	117½	70½	823,700	8,031,800	American Can	.25	2,473,998	3.00		4.11
138	138	142	136¼	147	136½	5,400	27,700	pfd.	100	412,333	7%		31.66
63⅞	62½	81⅛	50	63⅜	39	62,900	1,298,500	American Metal, Ltd.	No	595,114	*3.00	9 mo. 2.30	3.64
...	...	135	113⅜	117½	109	900	22,900	pfd	100	99,907	6%	9 mo. 18.92	50.27
111½	110⅝	124¾	93½	293	169	243,500	2,485,400	American Smelt. & Refin.	100	609,980	4.00	6 mo. 10.61	19.64
135	135	138	130	142	131	2,400	22,600	pfd.	100	500,000	7%	6 mo. 16.44	30.96
25⅜	24½	49½	22½	57	6⅜	16,700	508,800	Amer. Zinc & Lead	25	193,120	...		...
94⅞	94⅞	111½	90½	117⅞	40	3,200	38,300	pfd.	25	96,560	...		d2.72
115½	113¾	140	99	120½	53¾	1,814,300	19,128,600	Anaconda Copper Mining	50	3,302,817	6.00		3.37
31⅜	30	49½	29	112⅞	55½	41,500	318,500	Archer Dan. Mid.	No	213,712	4.00	7.34	5.77
103½	103½	115	103½				2,120	pfd.	100	43,000	7%	16.94	37.39
100½	100	115	90	114	63	13,400	96,400	Atlas Powder Co.	No	261,438	4.00	6.30	5.75
102	102	106½	99½	110½	102	1,040	3,860	pfd.	100	90,000	6%	6 mo. 10.83	22.71
68	66½	77⅞	53½	66½	50	760,200	4,911,200	Atlantic Refining	25	500,000	1.00	9 mo. 21.72	1.83
4⅜	4⅜	9½	4½	12¼	4¼	7,100	271,000	Butte Copper & Zinc	5	600,000	...		0.10
8	8	12⅜	6½	16⅜	8¼	16,200	128,200	Butte Superior Mng.	10	290,198	2.00	9 mo. 0.16	0.94
34	32½	37⅜	31⅞	122	65	18,200	177,000	By Product Coke	No	189,936	*5.00	9 mo. 5.78	5.68
1½	1½	4	1½	5⅜	1⅜	9,700	197,500	Calla Lead & Zinc	10	724,592	...	9 mo. ...	0.10
41⅜	41	61⅞	36⅜	47⅜	20½	64,200	1,921,600	Calumet & Hecla	25	2,005,502	2.50	9 mo. 0.95	0.29
31⅜	30	32	16½	119	61½	3,7400	194,400	Certainteed Prod.	No	400,000	...	9 mo. ...	5.31
...	...	81½	47½	63½	23¼	600	8,400	7% pfd.	100	62,904	7%	9 mo. 0.87	56.80
...	...	127½	77¼	74¼	37⅜		1,331,400	Chile Copper	25	4,415,497	3.00	6 mo. 1.96	2.51
...	...	207	121½	134½	79	40,000	458,700	Columb Carbon	No	402,131	...	9 mo. 5.24	4.83
492	480	492	225½	250½	137⅞	25,400	367,000	Commercial Solvents	No	217,722	8.00	13.19	9.25
80½	76½	82¾	60	64½	53	400,900	2,348,300	Cont. Can	No	1,420,000	5.00		7.21
128	125	...	...	128	123	80	2,280	pfd.	100	51,125	7%		86.82
99½	98½	107½	82	94	64⅜	204,400	1,112,600	Corn Products	25	2,530,000	2.00	9 mo. 3.00	3.50
143	140½	144½	139½	146⅜	138⅜	1,120	9,530	pfd.	100	250,000	7%	9 mo. 35.63	42.40
52½	51⅛	69½	42⅞	68¼	34⅜	93,600	1,037,900	Davison Chem.	No	480,000	...		6.21
45½	45½	64⅛	43⅞	61	40	10,600	139,700	Devoe & Rayn A	No	110,000	2.40	6 mo. †5.95	†5.03
115	115	115½	112	120	108	380	1,840	1st pfd.	100	17,473	7%	6 mo. 34.71	53.23
113⅜	113	119	113½	121½	114	7,400	36,100	Dupont deb.	100	904,539	6%	9 mo. 57.79	57.03
191½	188½	202	155⅜	503	310	153,800	755,200	Dupont de Nemours	No	2,661,658	*14.75	20.89	15.45
195½	193	207⅞	168	194½	163	102,400	225,300	Eastman Kodak	No	2,057,560	*8.00		9.61
125½	125½	128	125½	132½	123½	550	2,170	pfd.	100	61,657	6%		326.68
300	250	310	215	230	120	500	6,900	Fed. Mining & Smelting	100	50,400	...		23.36
94⅞	92½	98⅛	65½	89⅜	65	860,000	3,159,200	Fleischmann	No	4,500,000	*5.00	9 mo. 3.24	4.30
42½	41⅞	54⅞	37½	109½	43	33,900	539,000	Freeport Texas	No	729,844	4.00	4.49	5.12
89⅜	88½	91½	61	94⅜	141½	136,400	690,300	General Asphalt	100	206,887	...	6 mo. ...	4.74
132	132	136	104½	150	132	4,300	40,000	pfd.	100	68,742	5%	6 mo. d5.09	19.34
61	60½	64½	36⅞	37	20⅜	108,600	1,035,400	Glidden Com.	No	500,000	*2.00	3.37	2.88
105	105	106½	101½	105	95	370	5,390	prior pfd.	100	69,167	7%	32.69	23.91
66½	63½	82	53⅜	143½	71	563,700	3,616,700	Gold Dust	No		2.50		8.97
128	124⅜	...	...	380	192	1,610	4,470	Hercules Powder	No	147,000	14%	22.04	16.35
...	...	...	...	125	118½	010	1,280	pfd.	100	114,241	7%	9 mo. 24.69	28.02
71½	70	79½	62	84	64½	7,200	71,100	Household Prod.	No	575,000	*4.00	6 mo. 2.64	5.22
7⅞	7	17⅞	7	20⅞	13	13,200	115,600	Intern. Agri.	No	450,000			1.34
59½	58½	88½	58	85	48⅜	600	15,400	pfd.	100	100,000	7%		13.03
48½	47⅛	72½	40½	46	41½	325,600	10,152,600	Intern. Nickel	No	1,673,384	3.00	9 mo. 4.72	3.30
54⅞	54	63	43⅞	60	47½	8,400	73,500	Int. Print Ink	No	256,022	2.50	6 mo. 2.58	4.98
75	72½	90½	55½	69	49½	620	15,350	Intern. Salt	100	60,771	...	6 mo. 0.05	5.38
185½	183	242½	152½	202	96½	232,300	2,016,100	Johns-Mansville	No	750,000	3.00	9 mo. 4.94	4.78
93½	92½	113⅞	71⅜	124½	63½	119,600	507,400	Liquid Carbonic Corp.	No	125,000	4.00	7.05	5.90
38	37⅜	46	38	57¾	45	6,500	38,200	Mac and Forbes	No	378,500	*3.50	9 mo. 2.34	3.62
61½	60	68⅜	42½	190	117½	117,700	368,780	Mathieson Alk	No	147,207	6.00	9 mo. 9.54	10.93
122½	122½	125	120	130	115	60	2,650	pfd	100	24,750	7%	9 mo. 63.03	74.06
44½	43½	54½	30½	33	17½	85,200	1,380,500	Miami Copper	5	747,116	2.00		1.53
51⅜	50½	58	33	58½	29½	32,600	771,400	National Dist. Prod.	No	168,000	...		...
109½	109½	109½	67½	...	...	2,700	228,500	pfd. tem. ctfs.	...	...	...		...
145½	143	173	132	136	115	5,300	138,340	National Lead	100	309,831	5%		8.90
74½	72½	76	43			10,300	10,300	Newport Co.	50	130,000			
57½	56½	60½	38	41½	22⅜	44,800	499,200	Penick & Ford	No	433,773	...	9 mo. 1.32	1.76
385	375	362½	208	217	157	19,400	119,900	Peoples Gas Chi.	100	511,521	8%	9 mo. 8.98	10.81
37½	37	43½	27			194,400	1,300,700	Royal Baking, new com	100	800,000	1.00	6 mo. 0.53	1.14
110	110	113¼	95			2,600	7,600	pfd.	100	100,000	6%	6 mo. 7.26	15.11
				9⅜	6½	16,100	16,100	Spencer Kellogg	No	500,000	1.60	3.59	2.37
68½	66½	94	59½	71½	37	83,100	2,054,700	St Joseph Lead	10	1,950,509	*3.00		2.06
58	56⅞	62½	48	59⅜	37¼	307,300	4,265,600	Standard Oil Co. of N. J.	25	24,419,219	*1.50		1.52
39⅞	39½	45½	38	45½	28⅜	190,700	3,763,200	Standard Oil Co. of N. Y.	25	17,118,931	1.60		0.67
18½	17⅜	20⅞	16	19⅜	10½	69,500	786,000	Tenn. Cop. & Chem.	No	794,626	1.00		0.51
72⅜	71⅜	85½	69½	82½	62½	186,600	2,843,400	Texas Gulf Sulfur	No	2,540,000	4.00	5.72	4.76
122½	115½	128	75½	209	186½	608,000	2,738,300	Union Carbide	No	2,742,072	6.00	9 mo. 7.16	9.53
180½	179½	193½	128	138	102½	163,200	1,036,300	U. S. Ind. Alc.	No	240,000	6.00	6 mo. 3.90	7.26
...	...	...	...	125⅞	118⅜		860	pfd.	100	60,000	7%	6 mo. 19.12	36.03
90½	88½	116½	68	111½	60	116,100	1,319,800	Vanadium Corp.	No	376,637	*4.00	6 mo. 2.57	4.97
12⅞	12½	24½	9½	20⅜	12	26,700	495,800	Virginia Car. com.	No	486,700	...	0.69	...
42½	42½	65½	36½	64½	44⅜	6,400	99,320	6% pfd.	100	213,392	...	7.57	d5.41
91½	89	97½	86½	99½	88½	900	10,100	7% pfd.	100	125,000	7%	20.09	d1.70
								NEW YORK CURB					
...	...	6	23	31½	16½	1,300	11,000	Acetol Prod.	No	60,000	2.40		8.69
f48	43	43½	32	42⅜	33¼	3,700	37,000	Agfa Ansco	No	300,000	...		
444	444	445	146	197½	120	8,200	68,200	Aluminum Co. of America	No	1,472,625	...		3.28
106	106	108½	103½	110½	104	2,800	17,600	pfd.	100	1,472,625	6%		9.28
...	...	...	...	87½	74		92,600	Amer. Com. Alc.	No	77,000	...	3 mo. 2.66	...
67½	65½	69	39½	65	30⅜	235,600	886,300	Amer. Cyan.	20	428,465	8%	†3.67	†2.92
38⅞	38½	40⅜	25	28½	11⅜	15,700	143,900	Amer. Sol. & Chem. com	No	160,000	...	1.58	0.07
53	52½	55⅞	42	47⅞	25½	6,000	68,600	pfd.	No	100,000	...	6.52	3.17
36	34½	45½	33	54	26½	10,500	140,100	Anglo Chile Nitrate	No	1,756,750	...	6 mo.. ...	...
5½	5½	10½	4½	33½	7	4,200	98,200	Br. Celanese	No	2,650,000	...	0.55	...
28	23	...	...	46½	41	100	100	Canad. Ind. Alc.	No	1,092,915	1.52	†2.87	†2.49
...	...	...	...	226	156	160	6,050	Casein Co.	100	21,196	*9%		7.98
88	87	122	80¼	103	36½	9,200	99,700	Celanese Corp. of Am	No	1,000,000	...		1.72
...	...	...	...	122	34	400	4,700	Celluloid Co.	No	194,952	...		0.87
...	...	...	...	132	103½		2,300	1st pfd.	No	23,882	7.00		11.94
...	...	...	...	97½	75			7% pfd.	No	24,551	7.00		9.96
68¼	67¼	80¾	63	92	75	4,900	46,200	Colgate-Palmolive Peet			2.00		
...	...	...	...	...	...			Courtaulds	£1	12,000,000	22½%		26.55%
...	...	25½	15¾	24½	20	900	41,300	Am. dep-rects	...	...	...		...

1929 July 31 High	1929 July 31 Low	1929 High	1929 Low	1928 High	1928 Low	Sales In July	Sales Since Jan. 1	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1928	Earnings $-per share-$ 1927
...	...	...	...	23	7½	400	14,800	Heyden Chem.	10	150,000	...		1.0
8	8	11½	8	...	...			Imperial Chem. Ind.					
8	8	11½	8	98	38½		1,700	Monroe Chem.					
...	...	...	...	...	...	100	1,325	Monsanto Chem.	No	110,000	2.50	9 mo. 6.30	6.11
74½	74½	75	73	...	...			Penn Salt	50	150,000	5.00	8.27	8.09
				9⅜	6½	2,400	40,000	Pyrene Mfg.	10	219,470	.80		0.70
9	9	10⅜	7	...	...	225	5,375	Sherwin Williams	20	594,445	4.00	6.99	6.42
...	...	105⅜	81	111½	103	21,500	451,100	Silica Gel	No	600,000	...		
...	...	48¼	23⅛	92	65½			Snia Viscosa	120 lire	8,333,333	...		3.01 lire
				29	17		200	dep-recpts	...	...	...		...
44	40⅛	44	35½	10	5⅞	2,400	24,900	Swift & Co.	100	1,500,000	8%	9.87	8.13
...	...	139½	123½	42	31½	4,220	17,715	Tubize "B"	No	78,858	10.00		
385	375	550	305	150½	125	6,000	66,400	United Chem., pfd.	50	120,000	3.00		
38	36½	61½	34½	630	450		147,740	com.	No	102,000			
...	...	...	...	100	53⅜	½1,500	233,100	U. S. Gypsum	20	691,502	1.60	6 mo. 4.42	10.08
69⅞	68⅛	77⅜	56	...	...		21,500	Westvaco Chlorine Prod.	No	200,000	2.00	3.60	
...	...	...	...										
								CLEVELAND					
...	...	98¾	97	147½	104	4,205	19,511	Cleve-Cliff Iron	No	400,000	4.00		9.74
400	400	405	200	225	112½	270	1,004	Dow Chem.	No	120,000	6.00		
106¼	106¼	...	...	107	103¾	76	392	pfd.	100	30,000	7%		
...	...	105	102½	104¾	96	235	2,542	Glidden	No	500,000	*2.00	3.37	2.88
96½	96½	...	...	95	65½	1,105	13,605	prior pfd.	100	69,167	7%	32.69	23.91
106	106	108	104½	109½	106	884	4,484	Sherwin Williams	25	594,445	4.00	6.99	6.42
...	...	29	25	28	24½	173	1,873	pfd.	100	125,000	6%	39.21	37.82
								Wood Chemical Prod. "A"	No	20,000	2.00		7.75
								CHICAGO					
19	19	51	19½	96	91½	1,000	19,500	Monroe Chem	100	167,500	...		4.74
74	73	163	73	146	127½	5,600	48,477	Monsanto Chem.	No	148,000	2.50	9 mo. 6.30	8.58
128½	128½	140	124¼	...	..	7,350	40,200	Swift & Co.	100	1,500,000	8%	9.87	8.13
69¾	68¾	76	45¾	...	...	31,290	211,290	U. S. Gypsum	20	691,502	1.60	6 mo. 4.42	10.08
35½	35½	...	...	100	55	70	53,520	United Chemicals, pfd.	50	120,000	3.00		
								CINCINNATI					
...	...	151	129¼	...	...	285	572	Fleishmann pfd	100	12,200	6%	9 mo. 1,197.09	1,589.49
449½	448	480	279	300	249	7,065	30,913	Proc. & Gam	20	1,250,000	8.00	11.96	11.38
								PHILADELPHIA					
100	99	100	89	109½	92	5,315	12,215	Penn. Salt	50	150,000	5.00	8.27	8.09
292½	288	299	157	173½	114½	90,600	1,827,320	United Gas Imp.	50	3,903,791	6.00		6.28
								MONTREAL					
10	10	...	...	...	...	1,673	34,173	Asbestos Corp.	No	200,000	...		0.87
...	...	...	...	...	...	1,005	9,505	pfd.	100	74,564	7%		9.32
23¼	23	...	...	..	...	10,137	158,137	Canada Ind. Alc.	No	1,092,915	1.52	†2.87	†2.49
93	91½	...	...	...	...	82,458	346,158	Shawinigan W. & P.	No	1,844,700	2.00		2.41
								BALTIMORE					
...	...	43	24	28¾	17	100	5,300	Silica Gel	No	600,000	...		
								UNLISTED					
				80	70			Agfa Ansco, pfd	100	50,500	...		...
				375	190			Hercules Powd., com.	No	147,000	14%	9 mo. 15.10	16.36
66	63	...	...	82	64			Merck. & Co., pfd.	100	33,950	...		...

*Includes extra dividends. †Class A and class B shares combined. d Deficit.

The Industry's Bonds

1929 July 31 High	1929 July 31 Low	1929 High	1929 Low	1928 High	1928 Low	Sales In July	Sales Since Jan. 1	ISSUE	Date Due	Int. %	Int. Period	Orig. (1) Offering $
								NEW YORK STOCK EXCHANGE				
...	...	106½	103½	106¾	104	45	662	Am. Agri Chem.	1941	7½	F. A.	30,000
94½	84½	96½	93¾	97	92	136	923	Amer. Cyanid	1942	5	A. O.	
102	100	102	98½	102¾	99¾	170	1,928	Am. Smelt & Refin "A" 5%	1947	5	A. O.	...
96	96	100	93½	105½	92	103	2,095	Anglo Chilean	1945	7	M. N.	16,500
100½	100	102½	100	103¾	99⅞	63	786	Atlantic Refin.	1937	5	J. J.	15,000
...	...	102	100	103½	100	26	191	By product Coke	1945	5½	M. N.	8,000
...	...	103	96½	103⅛	100	2	61	Corn Product Refin	1934	5	M. N.	10,000
106½	106½	109½	103	117	106	167	509	General Asphalt	1939	6	A. O.	5,000
...	...	95	90½	95⅜	89½	33	144	Int. Agric. Corp.	1932	5	M. N.	30,000
...	...	81½	76½	86¼	77	3	81	Int. Agri. Corp. stamped extended	1942	5	M. N.	7,020
...	...	127	107	...	...	76	1,250	Montecatini	1937	7	J. J.	
...	...	99¼	93	...	...	58	1,370	Ex War	1937	7	J. J.	
...	...	113	110	...	...	24	86	People's Gas & Coke	1943	6	A. O.	10,000
...	...	105½	101	108½	102	60	377	Refunding	1947	5	M. S.	40,000
101½	101	103⅜	100	104	102	578	3,201	Standard Oil N. J.	1946	5	F. A.	120,000
105	104¾	115	102	120	101½	8	540	Tenn. Cop. and Chem.	1941	6	A. O.	3,000
...	...	82	69	91⅞	82	4	104	Va. Iron C. & C.	1949	5	M. S.	
								NEW YORK CURB				
100⅜	100⅜	102½	100	103½	100	191	1,955	Alum. Co. of Am 52	1952	5	M. S.	
120½	119½	122	104	121½	98			Amer. Com. Alc.	1943	5	M. N.	
				125	99	21	1,370	Amer. Solv. & Chem.	1936	6	M. S.	
93½	93⅜	100½	93	101⅜	97½	269	1,917	Koppers Gas and Coke	1947	5	J. D.	25,000
103⅞	103⅞	104	98¼	103½	98	64	312	Natl. Dist. Prod.	1935	6½	J. D. 15	3,500
91⅞	91⅞	94⅜	90½	98⅞	93½	142	1,125	Shawinigan W & P	1967	4½	A. O.	
...	...	112½	101	106⅜	100	11	233	Silica Gel. 6½% with warr.	1952	6½		
...	...	98⅜	94½	100	95	88	328	Solvay Am. Invest. Corp.	1942	5	M. S.	15,00
99⅞	99½	100¼	98⅝	101½	99⅜	264	1,864	Swift & Co.	1932	5	A. O.	50,00
...	...	104	99⅛	104	99½	44	343	Westvaco Chlorine Prod.	1937	5½	M. S.	2,50

German Acetic Acid Exports Increase to 9,526 Metric Tons

German production of acetic acid covering the years 1924-1928 is as follows:

Business year from October 1 to September 30	Number of Plants		Production of acetic acid (in terms of anhydrous acid) In metric tons			Proceeds from acetic acid tax in thousands of marks
	Total	Inactive	Taxed	Tax Free Denatured	Tax Free Not denatured	
1924–25	21	5	4965	73	13,367	2,567
1925–26	18	6	4123	21	14,864	2,049
1926–27	17	5	4277	8	20,423	2,114
1927–28	16	4	3985	6	23,239	1,970

Of the 16 plants shown in the above table, four were inactive during the year 1928-29. Of the remaining 12 plants two produced only negligible quantities of the acid as a by-product and two others produced calcium acetate which was delivered to other plants for further manufacture. The quantity produced in 1927-28 represents the output of eight plants. Of these, five plants employed acetate salts and the remaining three, carbide.

Exports of commercial acetic acid, glacial acetic acid and concentrated acetic acid amounted to the following quantities: 1924-1925 to 6,677 metric tons; 1925-1926 to 6,969 metric tons; 1926-1927 to 8,750 metric tons, and 1927-1928 to 9,526 metric tons. Principal destinations were Great Britain and the Netherlands, according to the Department of Commerce.

Japan Exports Surplus Nitric Acid Production

Japan is able to produce sufficient nitric acid to meet all of its needs and has a surplus for export. The ammonia synthesis process is the only method used and the bulk of the present production is from two fertilizer companies. The production during recent years was as follows: 1925—15,929,936 pounds; 1926—17,226,370 pounds; 1927—14,226,606 pounds; 1928—15,000,000 pounds. Manufacturers are not producing to their full capatity and many other factories besides the two at present concentrating on this product could manufacture if necessary. Estimates of potential production are not obtainable. Exports of nitric acid by Japan for the past three years were as follows: 1926—3,413,500 kin; 1927—4,310,400 kin; 1928—4,351,500 kin. (1 kin — 1.32 pounds), reports the Department of Commerce.

New Incorporations

Pertussin Chemical Co.—A. B. Cohen, 97 Cedar St., N. Y.—$10,000.

Amrith, Inc. Newark, manufacture pyrozlin articles—Corp. Trust Co., Jersey City—1,000 shs com.

Dominion Chemical Co., Syracuse, cleaning compounds—R. R. Smith, Syracuse—$1,000.

Globe Chemical Co., Newark, N. J.—W. P. Allen, Newark—$100,000.

Chemical Co. Corp., New York, stocks, bonds—U. S. Corp. Co.—$3,000,000.

Remiller Corp., chemicals—Rose & Paskus, 128 Broadway—100 shs com.

Carbon Monoxide Eliminator Corp., Wilmington, Del., chemicals—Corp. Trust Co. of America—$600,000.

Thermalene Gas Co., Kingston, N. C., thermalene gas—Colonial Charter Co. $50,000.

Disco, Inc. New York, coal, by-products of coal, U. S. Corp. Co.—$1,000.

National Acetate Silk Co., Inc., Wilmington, Del., acetate of cellulose, artificial silk—Corp. Trust Co. of America, Wilmington, Del.—$10,000,000, 300,000 shs com.

Colloidal Phosphate Co. of N. Y., fertilizers—J. F. Hughes, 50 Broadway, Manhattan—$100,000.

Agricultural Potassium Phosphate Co. of California, Ltd., Wilmington ,Del. chemicals—Corp. Trust Co. of America, Wilmington, Del.—90,000 shs com.

Mississippi Labs. Inc., Wilmington, Del., chemicals—Corp. Trust Co. of America—$50,000, 15,000 shs com.

Cretona Print & Dye Works, Clifton, manufacture artificial silk—Garrett Van Cleve, Patterson—50,000 shs com.

The Griffith Labs. of Toronto—Enoch L. Griffith, Carroll Griffith, Mervyn C. Phillips—500 no par shs.

National Cellulose of Canada Ltd., of Toronto, Ont., pulp and paper—Dalton C. Wells, Rowland F. May, Howard W. Alles—5,000 no par shs.

Will & Baumer Candle Co. declared regular quarterly dividends of 10 cents on common, payable August 15 to stock of record August 1, and $2 on preferred, payable October 1 to stock of record September 16.

Hercules Powder Net Higher For Six Months and Quarter

Hercules Powder Co. reports for six months ended June 30, 1929, net profit of $2,035,538 after depreciation and federal taxes, equivalent after dividend requirements on 7% preferred stock, to $2.74 a share earned on 598,000 no-par shares of common stock. This compares with $1,789,649 or $9.45 a share on 147,000 common shares in first half of 1928.

Net profit for quarter ended June 30, amounted to $1,096,492 after above charges, equal to $1.50 a share on 598,000 common shares against $939,046 or $1.24 a share on 598,000 common shares in preceding quarter and $992,611 or $5.39 a share on 147,000 common shares in June quarter of previous year.

Balance sheet as of June 30, 1929, shows total assets of $50, 740,215, compared with $46,773,521 and surplus of $13,952,073 against $12,483,890.

Hercules Powder Co. declared regular quarterly dividend of $1.75 on preferred, payable August 15 to stock of record August 3.

Archer-Daniels-Midland Reports Nine Months' Net of $950,382

Archer-Daniels-Midland Co. for nine months ended June 1, 1929, reports net profit of $950,382 after depreciation, federal taxes, etc., equivalent after 7% preferred dividend requirements, to $1.54 a share earned on 480,852 shares of no-par common stock. This compares with $1,390,528 or $5.45 a share on 213,712 common shares for nine months ended May 31, 1928. For quarter ended June 1, 1929, net profit was $309,744 after above charges, equal to 51 cents a share on 480,852 common shares against $222,789 or 31 cents a share on 480,852 shares in preceding quarter and $563,210 or $2.28 a share on 213,712 shares in quarter ended May 31, 1928.

For eight months ended June 30, 1929, net profit of Glidden Co. was $1,890,587 after charges and federal taxes, equivalent after allowing for eight months' dividend requirements on 74,443 shares of 7% prior preference stock of Glidden Co. and 6% on 5,000 shares of Metals Refining Co., to $2.54 a share earned on 600,000 shares of no-par common stock. This compares with $1,201,122 in corresponding period of previous year, equal to $2.19 a share on 400,000 common shares, after dividend requirements on 69,722 shares of 7% prior preference stock.

Monroe Chemical Co. reports for six months ended June 30, 1929, net profit of $150,837 after charges and federal taxes, equivalent after allowing for dividend requirements on $3.50 no-par preference stock, to 98 cents a share earned on 100,000 shares of no-par common stock. This compares with $129,008 in first six months of 1928, which, computed on the present share basis, is equal to 76 cents a share on the common stock.

DIRECT IMPORTERS of

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The Trend of Prices

Despite Seasonal Decline Business Holds High Level

Volume Well Above Corresponding Period of 1928 Despite Summer Slump—Alkalis and Sulfuric Acid Continue To Exceed Forecasts—New Factor Enters Synthetic Methanol Market—Mercury Battle On Pointing To Higher Prices.

While a seasonal decline is shown in most lines of activity, the volume of business during July appeared still to be larger than in 1928. Reports for the first half of July showed a slight reduction from June in the output of textiles, iron and steel, lumber and coal, but larger than in June, 1928.

Output of manufactures continued in large volume in June, while mineral production declined. There was a rise in the general level of commodity prices, reflecting chiefly an advance in agricultural commodities, according to the Federal Reserve Board.

Activity of manufacturing establishments continued at a high rate in June. Output of automobiles and of iron and steel showed a seasonal decline smaller than is usual from May to June. Silk mill activity increased and there was a growth in the production of cement, leather and shoes.

Production of copper at smelters and refineries decreased sharply, and output of cotton and wool textiles was also reduced, although production in all of these industries continued larger than in other recent years. The volume of factory employment and pay rolls in June showed a small seasonal decline from May, but, as in earlier months, was substantially larger than in 1928.

Output of mines was generally smaller in June than in May, reflecting declines in the production of coal, copper and other nonferrous metals. Output of petroleum, however, increased to new high levels.

Reports for the first half of July indicate some further reduction in output of cotton textiles, iron and steel, lumber and coal.

During the month of June freight car loadings were slightly smaller than in May, as a result of decreases in loadings of most classes of freight, except grain products and ores. In comparison with other recent years, however, loadings continued to show an increase.

Wholesale prices, according to the Bureau of Labor Statistics index, advanced from May to June on the average by approximately as much as they had declined during the preceding month. Farm products, particularly grains, cattle, beef, and hides, showed marked advances in price.

Prices of mineral products and their manufactures also averaged higher in June than in May, the rise reflecting largely increases in the price of petroleum and gasoline. Prices of leading imports, rubber, sugar, silk and coffee, showed a decline for the month as a whole.

During the first two weeks of July wheat and corn continued to move sharply upward, while hides declined slightly in price. Hog prices increased and prices of rubber and tin, which began to advance in the middle of June, continued to rise.

During the first half of July the volume of credit extended by member banks in leading cities declined somewhat, following a rapid increase in June. On July 17 loans and investments of these banks were about $400,000,000 above the level at the end of May.

The increase reflected chiefly rapid growth in loans to brokers and dealers in securities, and also some further increase in commercial loans. The banks' holdings of investments continued to decline, and were on July 17 about $700,000,000 below the middle of last year.

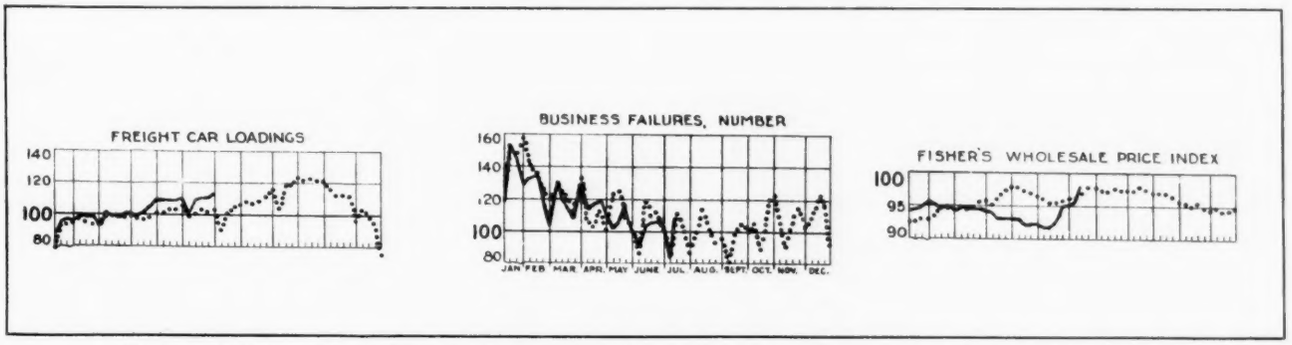
The total volume of reserve bank credit outstanding showed an increase of about $120,000,000 during the four weeks ended July 17, the increase being in discounts for member banks. Demand for additional reserve bank credit arose chiefly out of a considerable increase in the volume of money in circulation which accompanied the issuance of the new small-size currency.

As concerns activity in the chemical trade, something of the same seasonal slump is noticeable as has been reported in industry generally. But here too, in practically every item, although there is some recession from the peaks reached earlier in the year, the level of business is well above that of 1928. The alkalis and sulfuric acid, generally good indicators, continue to surpass any previous records for this season of the year since the war.

The entrance of a new factor into the production of synthetic methanol has occasioned considerable interest but despite some rumors to the contrary, it seems to date that no changes will be made in existing price schedules and the market continues firm.

The struggle between English houses and the producers' trust has begun in the domestic market for mercury. With domestic production sold up, foreign material again dominates the market and considerably higher prices are predicted. It is reported that stocks are unavailable and all quotations are qualified by the word nominal.

After a temporary activity following announcement of a new price schedules, the fertilizer market has quieted down. Oils and fats are showing their first turn upwards in some considerable time.



Business indicators prepared by the Department of Commerce. The weekly average 1923-1925 inclusive = 100. The solid line represents 1929 and the dotted line 1928.

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - July 1929 $1.017

Acetone — The past month has witnessed a reduction to 14c lb. in the market for this material. Demand continues to hold up well especially from artificial silk producers and prices remain firm at quoted levels. According to the Department of Commerce, April shipments of acetone amounted to 804,836 pounds, valued at $70,726.

Acid Acetic — Continues very firm and in good demand although somewhat eased off from the high point reached earlier in the year. This is generally attributed to the fact that the solvent demand is not quite so imperative as it was earlier in the year. Stocks of raw material are still none too plentiful and this factor contributes to the general strength of the market for the acid.

Acid Formic — Demand is said to have been improving and domestic material is held firmly at quoted prices. Imported material has not been in such great evidence during this year and imports for, the first five months totaled only 848,574 pounds as compared with 1,003,949 pounds during the same period of 1928. April imports totaled 188,121 pounds, as clompared with 252,348 pounds in March, Importers raised their prices during the past month to within ¼c lb. of the domestic price.

Acid Lactic — Has been moving in rather routine volume for this season of the year with the bulk of the contract material going to leather and textile manufacturers.

Acid Oxalic — Although producers have not altered current quotations, it has been reported that spot supplies are commanding a premium both on the domestic and imported material which is available. The market is very firm and seems quite likely to continue so.

Acid Sulfuric — Producers continue to work to full capacity to keep pace with demand which continues to use material as fast as it is produced. Production of sulfuric acid in plants of superphosphate manufacturers during May was 163,000

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
.26	.18½	.24	.24	Acetaldehyde, drs 1c-1 wks...lb.	.18½	.21	.21	.18½
				Acetaldol, 50 gal dr.....lb.	.27	.31	.31	.27
.24	.23	.20	.20	Acetanilid, tech, 150 lb bbl...lb.	.23	.24	.24	.23
				Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.29	.35	.35	.29
.35	.29	.29	.29	Acetin, tech drums.....lb.	.30	.32	.32	.30
.....	.....	.38	.32	Acetone, CP, 700 lb drums c-1				
.15	.13	.....	.....	wks.....lb.	.....	.15	.15	.15
.15	.13	.12	.12	Acetone Oil, bbls NY.....gal.	1.15	1.25	1.25	1.15
1.75	1.65	1.65	1.65	Acetyl Chloride, 100 lb cby...lb.	.55	.68	.68	.45
.45	.42	.42	.42	Acetylene Tetrachloride (see te-				
				trachlorethane).....				
				Acids				
				Acid Acetic, 28% 400 lb bbls				
3.88	3.38	3.38	3.38	c-1 wks.....100 lb.	.....	3.88	3.88	3.88
13.68	11.92	11.92	11.92	Glacial, bbl c-1 wk.....100 lb.	.....	13.68	13.68	13.68
1.00	.98	.98	.98	Anthranilic, refd, bbls.....lb.	.98	1.00	1.00	.98
.80	.80	.80	.80	Technical, bbls.....lb.	.....	.80	.80	.80
2.25	1.60	1.60	1.25	Battery, cbys.....100 lb.	1.60	2.25	2.25	1.60
.60	.57	.57	.57	Benzoic, tech, 100 lb bbls....lb.	.57	.60	.60	.57
				Boric, crys. powd, 250 lb.				
.11	.08½	.08½	.08½	bbls.....lb.	.05½	.06½	.06½	.05½
1.25	1.25	1.25	1.25	Broenner's, bbls.....lb.	.....	1.25	1.25	1.25
.90	.85	.85	.80	Butyric, 100% basis cbys.....lb	.85	.90	.90	.85
4.85	4.85	4.90	4.85	Camphoric.....lb.	.....	4.85	4.85	4.85
.28	.13	.25	.25	Carbolic, 10%, 50 gal bbls....lb.	.13	.14	.14	.13
				Chlorosulfonic, 1500 lb drums				
.16	.15	.15	.15	wks.....lb.	.04½	.05½	.05½	.04½
.30	.25	.37	.25	Chromic, 99%, drs extra.....lb.	.19	.21	.23	.19
1.06	1.00	1.00	1.00	Chromotropic, 300 lb bbls....lb.	1.00	1.06	1.06	1.00
				Citric, USP, crystals, 230 lb.				
.44½	.59	.44½	.43	bbls.....lb.	.46	.59		.46
.97	.95	.95	.95	Cleve's, 250 lb bbls.....lb.	.52	.54	.59	.52
.70	.68	.60	.57	Cresylic, 95%, dark drs NY..gal.	.60	.70	.54	.60
.72	.72	.70	.60	97-99%, pale drs NY.....gal.	.72	.77	.77	.72
				Formic, tech 90%, 140 lb.				
.12	.11	.11	.10	cby.....lb.	.11½	.11½	.11½	.10½
.55	.50	.50	.50	Gallic, tech, bbls.....lb.	.50	.55	.12	.50
.74	.74	.74	.69	USP, bbls.....lb.	.....	.74	.55	.74
1.06	1.00	1.00	1.00	Gamma, 225 lb bbls wks.....lb.	.80	.85	.74	.74
.63	.57	.57	.57	H, 225 lb bbls wks.....lb.	.68	.72	.99	.80
.67	.67	.67	.65	Hydriodic, USP, 10% soln cby lb.	.....	.67	.72	.67
				Hydrobromic, 48%, coml, 155			.67	
.48	.45	.45	.45	lb cbys wks.....lb.	.45	.48	.48	.45
				Hydrochloric, CP, see Acid				
				Muriatic.....			.....	.....
.90	.80	.80	.80	Hydrocyanic, cylinders wks...lb.	.80	.90	.90	.80
				Hydrofluoric, 30%, 400 lb bbls				
.06	.06	.06	.06	wks.....lb.	.....	.06	.06	.06
				Hydrofluosilicic, 35%, 400 lb				
.11	.11	.11	.11	bbls wks.....lb.	.....	.11	.11	.11
				Hypophosphorous, 30%, USP,				
.85	.85	.85	.85	demijohns.....lb.	.....	.85	.85	.85
.06	.04½	.05½	.05½	Lactic, 22%, dark, 500 lb bbls lb.	.04½	.05	.05½	.04½
.13½	.12	.13	.13	44%, light, 500 lb bbls.....lb.	.11	.11½	.12½	.11
.54	.52	.52	.52	Laurent's, 250 lb bbls.....lb.	.40	.42	.42	.40
.60	.48	.....	.....	Malic, powd., kegs.....lb.	.48	.60	.60	.48
.65	.60	.60	.60	Metanilic, 250 lb bbls.....lb.	.60	.65	.65	.60
				Mixed Sulfuric-Nitric.....				
.08	.07½	.07½	.07½	tanks wks.....N unit	.07	.07½	.07½	.07
.01½	.01	.01	.01	tanks wks.....S unit	.008	.01	.01	.008
.21	.18	.21	.18	Monochloroacetic, tech bbl..lb.	.18	.21	.21	.18
.65	.65	1.65	1.65	Monosulfonic, bbls.....lb.	1.65	1.70	1.70	1.65
				Muriatic, 18 deg, 120 lb cbys				
1.40	1.35	1.35	1.35	c-1 wks.....100 lb.	.....	1.35	1.40	1.35
				tanks, wks. 100 lb.		1.00	1.00	1.00
1.80	1.70	1.70	1.70	20 degrees, cbys wks...100 lb.	.....	1.45	.....	1.45
.95	.85	.95	.95	N & W, 250 lb bbls.....	.85	.95	.95	.85
.59	.55	.55	.55	Naphthionic, tech, 250 lb.....	.....	Nom.	.59	.55
				Nitric, 36 deg, 135 lb cbys c-				
5.00	5.00	5.00	5.00	wks.....100 lb.	.....	5.00	5.00	5.00
				40 deg, 135 lb cbys, c-1				
6 00	6.00	6.00	6.00	wks.....100 lb.	.....	6.00	6.00	6.00
.11½	.10½	.11½	.11	Oxalic, 300 lb bbls wks NY...lb.	.11	.11½	.11½	.11
.08½	.08	.08	.07	Phosphoric 50%, 150 lb cby..lb.	.08	.08½	.08½	.08
.16	.16	.19	.16	Syrupy, USP, 70 lb drs....lb.	.....	.16	.16	.16
.50	.50	.50	.50	Picramic, 300 lb bbls.....lb.	.65	.70	.70	.65
.50	.40	.45	.30	Picric, kegs.....lb.	.40	.50	.50	.40
				Pyrogalic, technical, 200 lb				
.86	.86	.86	.86	bbls.....lb.	.....	.86	.86	.86
.32	.27	.27	.27	Salicylic, tech, 125 lb bbl.....lb.	.37	.42	.42	.37
.16	.15	.15	.15	Sulfanilic, 250 lb bbls.....lb.	.15	.16	.16	.15
				Sulfuric, 66 deg, 180 lb cbys				
1.95	1.60	1.60	1.60	1c-1 wks.....100 lb.	1.60	1.95	1.95	1.60
				tanks, wks. ton		15.50	15.50	15.50
1.37½	1.20	1.20	1.20	1500 lb dr wks.....100 lb.	1.50	1.65	1.65	1.50
1.12½	1.12½	1.10	1.10	60°, 1500 lb dr wks....100 lb.	1.27½	1.42½	1.42½	1.27½
				Oleum, 20%, 1500 lb. drs 1c-1				
1.52½	1.52½	1.50	1.50	wks .....100 lb.	.....	1.52½	1.52½	1.52½

News Notes

"Over a Century of Service and Progress"

1816 AUGUST 1929 1929

Formic Acid, 85 and 90%:

As distributors for American producers we are in a very favorable position to supply a water white **Formic Acid** of both 85 and 90% strength, packed in strong American carboys holding 115 pounds net. Our delivery facilities are of the best maintaining stocks as we do at warehouses convenient to consuming points. We would appreciate an opportunity of figuring with you on your requirements.

Oxalic Acid:

A firmer position is noted in this item. Manufacturers seem to be well sold up. There has been increasing interest in this item during the past several months, and a firmer price tone is noted. We always have spot stocks available for prompt shipment.

Gums, Waxes, Starches, etc.:

We maintain a special department to handle the sale and distribution of these commodities. Extensive stocks are carried for ready shipment, and prices are consistent with market values. Your inquiries are respectfully solicited.

Magnesite and Magnesium Chloride:

We are particularly well placed to supply these commodities being direct representatives of foreign producers. We have constant arrivals at the principal ports of entry, and stocks available at all times.

Seasons, Leather Dressings, Finishes, Sizes, etc:

We make a specialty of these products for the Leather, Paper and Textile industries. Our factory at Jersey City is well equipped to supply these materials, and is in position to match buyers' specifications. We have been actively engaged in this line of work for a great many years, and consequently feel that we are exceptionally well placed to supply these commodities.

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Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - July 1929 $1.017

short tons, as compared with 166,488 tons in April and 182,866 tons in March. Consumption in manufacture of superphosphate was the smallest of the year at 183,321 tons. Stocks at the end of May totaled 89,260 tons, as compared with 91,616 tons at ehe end of April and 107,141 tons at the end of March.

Alcohol — Has been rather routine and dull during the past month as is quite unexpected at this season of the year, which finds the industrial demand light and with the season not as yet far enough advanced for the Fall demand. Production of ethyl alcohol by the entire industry amounted to 8,008,230.70 wine gallons during May, according to the Industrial Alcohol Institute as compared with 7.741,638.73 gallons during April. For the first five months of the year production totaled 38,891,822.56 gallons, as compared with 30,077,273.42 gallons for the same period in 1928, based on Government reports. Ethyl production for the first five months of 1927 was 31,986,801.58 gallons. The May production of ethyl alcohol exceeded the output in that month in 1928, 1927 and 1926, the figures for the same month last year being 5,812,026.86 gallons. The output of completely denatured alcohol during May amounted to 3,660,717.26 wine gallons, it was reported by the institute, which compares with 2,846,879.24 gallons during April, and with 2,613,777.25 gallons during May, 1928, and with 3,256,477.22 gallons during May, 1927. For the first five months of the year, the production of completely denatured alcohol aggregated 15,408, 460.91 gallons, as compared with 10,238, 791.68 gallons for the corresponding period last year, and with 13,311,290.16 gallons during the same five months of 1927. The amount of specially denatured alcohol produced during May was 4,918,615.36 gallons, as against 4,602,601.92 gallons produced in April and 3,910,998.13 gallons produced in May 1928. For the year to the end of May, production of specially denatured amounts to 23,410,736.22 gallons,as compared with 18,331,350.27 gallons for the same period last year, and with 16,952,215.75 gallons for the five months of 1927.

Ammonia — Continues to move in rather routine volume for this season of the year with producers shipping under contract requirements as fast as the material is produced.

Ammonium Chloride — Although this is by no means the active season for this material which does not come until

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
42.00	42.00	42.00	42.00	40%, lc-l wks net .....ton	.....	42.80	42.00	42.00
.40	.30	.30	.30	Tannic, tech, 300 lb bbls..lb.	.30	.40	.40	.30
				Tartaric, USP, crys, powd,				
.38	.34½	.37	.29½	300 lb. bbls.....lb.	.38	.38½	.38½	.38
.85	.85	.85	.85	Tobias, 250 lb bbls .....lb.	.....	.85	.85	.85
2.75	2.75	2.75	2.00	Trichloroacetic bottles.....lb.	.....	2.75	2.75	2.75
2.00	2.00	2.00	2.00	Kegs.....lb.	.....	2.00	2.00	2.00
1.25	1.00	1.00	1.00	Tungstic, bbls.....lb.	1.79	2.10	2.10	1.00
.55	.43	.45	.45	Albumen, blood, 225 lb bbls..lb.	.43	.47	.47	.43
				dark, ...bbls., lb.	.12	.20	.20	.12
.84	.78	.95	.80	Egg, edible.....lb.	.75	.78	.83	.70
.80	.70	.92	.77	Technical, 200 lb cases ..lb.	.70	.75	.80	.70
.65	.60	.60	.60	Vegetable, edible.....lb.	.60	65	.65	.60
.55	.50	.50	.50	Technical.....lb.	.50	.55	.55	.50
				Alcohol				
				Alcohol Butyl, Normal, 50 gal				
.20	.18½	.20	.19	drs c-l wks.....lb.	.....	.1775	.17½	.17½
.19½	.18½	.20½	.19½	Drums, 1-c-1 wks.....lb.	.....	.1825	.18½	.18½
.19	.17½	.19½	.18½	Tank cars wks.....lb.	.....	.1725	.17½	.17½
				Amyl (from pentane)				
2.25	1.75	.....	.....	drs c-l wks.....gal.	.....	1.67	1.67	1.67
1.80	1.70	1.70	1.70	Diacetone, 50 gal drs del..gal.	1.70	1.80	1.80	1.70
				Ethyl, USP, 190 pf, 50 gal				
3.70	2.65	3.70	3.70	bbls.....gal.	.....	2.69½	2.69½	2.69½
.55	.50	.50	.50	Anhydrous, drums.....gal.	.....	.71	.71	.71
				Completely denatured, No. 1,				
.52	.48½	.52	.37½	190 pf, 50 gal drs drums extra.....gal.	.....	.52	.52	.49
				No. 5, 188 pf, 50 gal drs.				
.50	.43	.50	.29	drums extra.....gal.	.....	.51	.51	.48
.46	.41	.46	.25	Tank, cars.....gal.	.....	.49	.49	.46
1.25	1.00	1.00	1.00	Isopropyl, ref, gal drs.....gal.	1.00	1.25	1.25	1.00
1.00	1.00	1.00	1.00	Propyl Normal, 50 gal dr..gal.	.....	1.00	1.00	1.00
.82	.80	.80	.80	Aldehyde Ammonia, 100 gal dr lb.	.80	.82	.82	.80
				Alpha-Naphthol, crude, 300 lb				
.65	.65	.65	.65	bbls.....lb.	.....	.65	.65	.65
				Alpha-Naphthylamine, 350 lb				
.37	.35	.35	.35	bbls.....lb.	.32	.34	.34	.32
				Alum Ammonia, lump, 400 lb				
3.30	3.25	3.25	3.15	bbls, lc-1 wks.....100 lb.	3.25	3.30	3.30	3.25
				Chrome, 500 lb casks, wks				
5.50	5.25	5.25	5.25	.....100 lb.	5.25	5.50	5.50	5.25
				Potash, lump, 400 lb casks				
3.20	3.10	3.50	3.10	wks.....100 lb.	3.00	3.10	3.20	3.00
				Chrome, 500 lb casks wks				
5.50	5.25	5.25	5.25	.....100 lb.	5.25	5.50	5.50	5.25
				Soda, ground, 400 lb bbls				
3.75	3.75	3.75	3.75	wks.....100 lb.	.....	3.75	3.75	3.75
26.00	24.30	27.00	26.00	Aluminum Metal, c-1 NY.100 lb.	.....	24.30	24.30	24.30
				Chloride Anhydrous, 275 lb				
.40	.35	.35	.35	drums.....lb.	.....	.05	.40	.05
				Hydrate, 96%, light, 90 lb				
.18	.17	.17	.17	bbls.....lb.	.17	.18	.18	.17
.24	.18	.22	.23	Stearate, 100 lb bbls.....lb.	.25	.26	.26	.25
				Sulfate, Iron, free, bags c-1				
1.75	1.75	1.75	1.75	wks.....100 lb.	1.95	2.05	2.05	1.95
1.40	1.40	1.40	1.35	Coml, bags c-1 wks..100 lb.	.....	1.40	1.40	1.40
1.15	1.15	1.15	1.15	Aminoazobenzene, 110 lb kegs lb.	.....	1.15	1.15	1.15
				Ammonium				
.14	.13½	.13½	.10	Ammonia, anhyd, 100 lb cyl..lb.	.14	.14	.14	.14
.03	.03	.03	.02½	Water, 26°, 800 lb dr del..lb.	.....	.03½	.03½	.03½
				Bicarbonate, bbls., f.o.b. plant				
				.....100 lb.	.....	5.15	6.50	5.15
.22	.21	.21	.21	Bifluoride, 300 lb bbls.....lb.	.21	.22	.22	.21
.09	.08½	.08½	.08½	Carbonate, tech, 500 lb cs..lb.	.09	.12	.12	.09
				Chloride, white, 100 lb. bbls				
5.15	4.45	5.05	4.85	wks.....100 lb.	4.45	5.15	5.15	4.45
5.75	5.25	.07	.05½	Gray, 250 lb bbls wks....lb.	5.25	5.75	5.75	5.25
.11½	.11	.11	.11	Lump, 500 lb cks spot...lb.	.11	.11½	.11½	.11
.16	.15	.15	.15	Lactate, 500 lb bbls.....lb.	.15	.16	.16	.15
.10	.06	.06	.06	Nitrate, tech, casks.....lb.	.06	.10	.10	.06
.38	.27½	.27½	.27½	Persulfate, 112 lb kegs.....lb.	.31	.34	.34	.31
				Phosphate, tech, powd, 325 lb				
.18	.18	.18	.18	bbls.....lb.	.12½	.13	.13	.12½
2.90	2.20	2.30	2.55	Sulfate, bulk c-1.....100 lb.	2.05	2.20	2.40	2.05
3.00	2.50	2.55	2.35	Southern points.....100 lb.	2.05	2.20	2.45	2.05
				Nitrate, 26% nitrogen				
				31.6% ammonia imported				
60.85	60.85	59.70	56.85	bags c. i. f.....ton	52.40	52.70	60.85	52.40
.60	.55	.55	.55	Sulfocyanide, kegs.....lb.	.36	.48	.48	.36
				Amyl Acetate, (from pentane)				
2.25	1.72	2.25	1.90	drs.....gal.	1.60	1.70	1.70	1.60
.....	.....	.....	.....	Tech., drs.....gal.	1.60	1.70	1.70	1.60
				Alcohol, see Fusel Oil.....				
				Furoate, 1 lb tins.....lb.		5.00		
.16½	.15½	.15½	.15	Aniline Oil, 960 lb drs.....lb.	.15½	.16½	.16½	.15½
.48	.41	.41	.41	Annatto, fine.....lb.	.34	.37	.37	.34
				Anthraquinone, sublimed, 125 lb				
1.00	.90	.90	.90	bbls.....lb.	.80	.90	.90	.80
				Antimony, metal slabs, ton lots				
.12	.09½	.11½	.14	.....lb.	.....	.08½	.10	.08½
.12	.10	.15½	.14	Needle, powd, 100 lb cs....lb.	.....	.10	.10	.09
				Chloride, soln (butter of)				
.18	.17	.17	.17	cbys.....lb.	.17	.18	.18	.17
.12	.09½	.16½	.16½	Oxide, 500 lb bbls.....lb.	.09	.09½	.10	.09
.....	.....	.28	.25½	Salt, 66%, tins.....lb.	.25½	.26	.26	.25½
.20	.16	.20	.16	Sulfuret, golden, bbls.....lb.	.16	.20	.20	.16
.42	.38	.42	.37½	Vermilion, bbls.....lb.	.38	.42	.42	.38
.19	.17	.18	.18	Archil, conc, 600 lb bbls.....lb.	.17	.19	.19	.17
.14	.12	.12	.12	Double, 600 lb bbls.....lb.	.12	.14	.14	.12
.16	.15	.16	.14	Triple, 600 lb bbls.....lb.	.15	.16	.16	.15
.08	.08	.15	.12½	Argols, 80%, casks.....lb.	.....	.08	.08	.08
.16	.15	.08	.03	Coude, 30%, casks.....lb.	.15	.16	.16	.15
.11	.10½	.10½	.10½	Arsenic, Red, 224 lb kegs, cs..lb.	.09	.11	.11	.09
.04	.03¾	.04	.03½	White, 112 lb kegs.....lb.	.04	.04½	.04½	.04
14.75	14.75	14.75	14.75	Asbestine, c-1 wks.....ton	.....	15.00	15.00	4.75

Triethanolamine

THE PRODUCTION of Triethanolamine has recently been expanded in response to a greatly increased demand. Shipments can now be made without delay and the price has been reduced as a result of lowered manufacturing costs.

The use of this remarkable compound has been adapted to a wide variety of industries. Some of these include—

Paper	*Dyeing*
Textiles	*Cosmetics and Pharmaceuticals*
Rubber	*Dry Cleaning*
Adhesives	*Synthetic Resins*

Triethanolamine is an organic base which combines readily with fatty acids to form soaps, which are soluble in water, gasoline and a large number of organic liquids. The soaps, particularly triethanolamine oleate, have remarkable emulsifying properties. For example, water emulsions of mineral and vegetable oils, paraffin, carnauba wax or kerosene can readily be prepared through its use. These emulsions are stable for long periods of time and over temperature ranges varying from freezing almost to the boiling point.

Because of its hygroscopic properties, Triethanolamine is an excellent softener for paper and textile fibers. It is also a solvent for many organic substances and in many cases greatly increases their penetration into cellular materials. For this reason it is used to aid the impregnation of wood and paper with various solutions, and in the dyeing of textiles where it greatly improves the intensity of the color.

Other applications include its use as dispersing agent for colloidal substances such as rubber, the synthesis of artificial resins of the phenol and glycerine type, and in the formulation of inks.

★

Triethanolamine may be of use in solving your particular problem. Our technical department will be pleased to offer suggestions and information about its properties.

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Carbide and Carbon Building

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New York City UCC *Unit of Union Carbide and Carbon Corporation*

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - July 1929 $1.017

the Fall, domestic producers report good movement for this season of the year and surpassing previous estimates.

Ammonium Sulfate — Business proceeds in about normal fashion for this season of the year. Some activity followed the announcement of prices but at present the business is routine in nature.

Antimony — The past month has witnessed but little demand for the metal and the market generally has been steady but inactive. The price has declined ¼c lb. during the past month and quotations are at 8⅝c lb. The oxide price is unchanged as compared with that of last month, but needle has advanced considerably. Quotations are at 10c lb., marking an increase of 1c lb. during the month. This has not been due to any great demand, but merely to the fact that material is very scarce as nobody is importing material for grinding.

Beeswax — Has been rather quiet during the past month and prices remain at about the same level with yellow at 35c lb. and refined at 40c lb. Imports of beeswax and other animal wax during April totaled 452,515 pounds, valued at $73,283 according to the Department of Commerce.

Benzol — There has been a rather natural falling off in industrial demand during the past month, but the respite has been so slight that producers are still working on full schedule to meet demands. Exports of benzol during April totaled 434,209 gallons valued at $96,255, the bulk of which, 373,716 gallons, went to Italy.

Butyl Acetate — Has been quite firm and in much improved position generally during the past month. As of August 1, producers announced that all sales would be conducted on a pound basis as opposed to the previously prevailing gallon basis. As a result, quotations are at 18.1c lb. in tanks and 18.4c @ 18.8c lb. in drums.

Calcium Acetate — Continues to be in heavy demand with makers of acetic acid heading the list. Although there is nothing like a surplus and material is shipped into consuming channels as fast as produced, the supply still continues to be satisfactory.

Calcium Chloride — Although business is beginning to fall away from the peak set during the Spring months, busi-

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
				Barium			
57.00	47.00	47.50	47.50	Barium, Carbonate, 200 lb bags wks.....ton	58.00	60.00	60.00	57.00
.12½	.12	.12	.12	Chlorate, 112 lb kegs NY..lb.	.14	.15	.15	.14
65.00	54.00	65.00	57.50	Chloride, 800 lb bbl wks...ton	65.00	68.00	68.00	63.00
.13½	.13	.13	.13	Dioxide, 88%, 690 lb drs...lb.	.12	.13	.13	.12
.04½	.04½	.04½	.04½	Hydrate, 500 lb bbls.....lb.	.04½	.05½	.05½	.04½
.08	.07½	.07½	.07½	Nitrate, 700 lb casks.....lb.	.08¼	.08½	.08½	.08½
24.00	23.00	23.00	23.00	Barytes, Floated, 350 lb bbls wks.....ton	23.00	24.00	24.00	23.00
8.00	5.00	.....	.....	Bauxite, bulk, mines.....ton	5.00	8.00	8.00	5.00
.38	.36	.40	.37	Beeswax, Yellow, crude bags..lb.	.....	.35	.37	.34
.43	.41	.46	.38	Refined, cases.....lb.	.....	.40	.42	.41
.58	.56	.58	.56	White, cases.....lb.	.51	.53	.53	.51
.70	.65	.65	.65	Benzaldehyde, technical, 945 lb drums wks.....lb.	.60	.65	.65	.60
				Benzene			
.23	.21	.23	.21	Benzene, 90%, Industrial, 8000 gal tanks wks.....gal.	.....	.23	.23	.23
.23	.21	.23	.21	Ind. Pure, tanks works....gal.	.....	.23	.23	.23
.74	.70	.70	.70	Benzidine Base, dry, 250 lb bbls.....lb.	.70	.74	.74	.70
1.00	1.00	1.00	1.00	Benzoyl, Chloride, 500 lb drs.lb.	.....	1.00	1.00	1.00
.25	.25	.....	.....	Benzyl, Chloride, tech drs....lb.	.....	.25	.25	.25
.26	.24	.24	.24	Beta-Naphthol, 250 lb bbl wk.lb.	.24	.26	.26	.24
1.35	1.35	1.35	1.35	Naphthylamine, sublimed, 200 lb bbls.....lb.	.....	1.35	1.35	1.35
.65	.63	.63	.63	Tech, 200 lb bbls.....lb.	.60	.65	.68	.60
90.00	80.00	80.00	80.00	Blanc Fixe, 400 lb bbls wks..ton	80.00	90.00	90.00	80.00
				Bleaching Powder			
2.25	2.25	2.25	2.00	Bleaching Powder, 300 lb drs c-1 wks contract.....100 lb.	.....	2.25	2.25	2.25
2.00	2.00	2.25	2.00	700 lb drs c-1 wks contract .....100 lb.	.....	4.00	4.00	4.00
5.25	4.65	3.75	4.75	Blood, Dried, fob, NY.....Unit	.....	4.25	4.60	4.00
5.35	4.75	.....	.....	Chicago.....Unit	.....	4.50	4.85	4.40
5.05	4.50	.....	.....	S. American shipt.....Unit	.....	4.50	4.70	4.25
.35	.31	.30	.28	Blues, Bronze Chinese Milori Prussian Soluble.....lb.	.....	.35	.35	.32
30.00	29.00	38.00	29.00	Bone, raw, Chicago.....ton	.....	42.00	42.00	42.00
.07	.06	.06	.06	Bone, Ash, 100 lb kegs.....lb.	.06	.07	.07	.06
.08½	.08½	.08½	.08½	Black, 200 lb bbls.....lb.	.....	.08½	.08½	.08½
37.00	31.00	30.00	28.00	Meal, 3% & 50%, Imp....ton	.....	31.00	35.00	30.00
.05	.2½	.04½	.04½	Borax, bags.....lb.	.02½	.03½	.03½	.02½
.12	.10½	.11	.11	Bordeaux, Mixture, 16% pwd..lb.	.10½	.12	.12	.10½
.10	.08	.08	.08	Paste, bbls.....lb.	.10	.10½	.10½	.10
28.00	26.00	28.00	26.00	Brazilwood, sticks, shpmt....lb.	26.00	28.00	28.00	26.00
1.20	.60	.60	.60	Bronze, Aluminum, powd blk.lb.	.60	1.20	1.20	.60
1.25	.55	.55	.55	Gold bulk.....lb.	.55	1.25	1.25	.55
1.60	1.40	1.60	1.42	Butyl, Acetate, normal drs... ..... lb.	18.4	18.8	18.8	18.4
1.55	1.35	1.55	1.42	Tank, wks.....lb.	18.1	1.35	18.1	18.1
.70	.70	.70	.70	Aldehyde, 50 gal drs wks...lb.	.....	.70	.70	.70
				Carbitol s ee Diethylene Glycol Mono (Butyl Ether).....	.....	.....	.....	.....
				Cellosolv e (see Ethylene glycol mono b utyl ether).....				
				Furoate, tech., 50 gal. dr., lb.	.....	.50	.50	.50
.36	.34	.34	.34	Propionate, drs.....lb.	.34	.36	.36	.34
.60	.60	.60	.60	Stearate, 50 gal drs.....lb.	.....	.60	.60	.60
.60	.57	.57	.57	Tartrate, drs.....lb.	.57	.60	.60	.57
2.00	1.35	1.50	1.35	Cadmium, Sulfide, boxes.....lb.	.95	1.75	1.75	.75
				Calcium			
4.50	3.50	3.50	3.50	Calcium, Acetate, 150 lb bags c-1.....100 lb.	.....	4.50	4.50	4.50
.09	.06	.07½	.07½	Arsenate, 100 lb bbls c-1 wks.....lb.	.07	.09	.09	.07
.06	.05	.05	.05	Carbide, drs.....lb.	.05	.06	.06	.05
1.00	1.00	1.00	1.00	Carbonate, tech, 100 lb bags c-1.....lb.	1.00	1.00	1.00	1.00
27.00	25.00	27.00	27.00	Chloride, Flake, 375 lb drs c-1 wks.....ton	.....	22.75	25.00	22.75
23.00	20.00	21.00	21.00	Solid, 650 lb drs c-1 fob wks .....ton	20.00	20.00	20.00	20.00
52.00	52.00	52.00	52.00	Nitrate, 100 lb bags.....ton	.....	42.00	52.00	42.00
.....	.....	.....	.....	Peroxide, 100 lb. drs.....lb.	.....	1.25	1.25	1.25
.08	.07	.09	.09	Phosphate, tech, 450 lb bbls lb.	.08	.08½	.08	.07
				Stearate, 100 lb bbls.....lb.	.25	.26	.26	.25
				Calurea, bags S. points, c.i.f. ton	.....	82.15	82.15	82.15
.18	.18	.....	.....	Camwood, Bark, ground bbls..lb.	.....	.18	.18	.18
.28	.22	.33	.33	Candelilla Wax, bags.....lb.	.22	.24	.24	.22
				Carbitol, (See Diethylene Gycol Mono Methyl Ether).....	.....	.....	.....	.....
.15	.08	.08	.08	Carbon, Decolorizing, 40 lb bags c-1.....lb.	.08	.15	.15	.08
.12	.12	.12	.12	Black, 100-300 lb cases 1c-1 NY.....lb.	.....	.12	.12	.12
.06	.05½	.05½	.05½	Bisulfide, 500 lb drs 1c-1 NY.....lb.	.05½	.06	.06	.05½
.06	.06	.06	.06	Dioxide, Liq. 20-25 lb cyl...lb.	.....	.06	.06	.06
.07½	07	.07	.07	Tetrachloride, 1400 lb drs delivered.....lb.	.06½	.07½	.07½	.06½
.58	.45	.50	.50	Carnauba Wax, Flor, bags....lb.	.36	.37	.43	.39
.60	.40	.90	.54	No. 1 Yellow, bags.....lb.	.....	.34½	.40	.34½
.38	.34	.37	.24	No. 2 N Country, bags.....lb.	.....	.28	.32	.28
.56	.38	.68	.48	No. 2 Regular, bags.....lb.	.32	.33	.36	.32
.32	.25	.....	.....	No. 3 N. C.....lb.	.....	.25	.25	.24
.32	.25½	.....	.....	No. 3 Chalky.....lb.	.....	.25	.26	.25
.18½	.14½	.18½	.15½	Casein, Standard, ground.....lb.	.15	.15½	.16	.15

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Organic Chemicals

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - July 1929 $1.017

ness during the past month has been exceptionally good, showing about a 20 per cent increase over July of last year.

Carnauba Wax — The past month has been an unusually quiet one and what price changes there have been have tended downward. Flora is lower at 36c @ 37c lb., as is No. 2 regular at 32c @ 33c lb. Other grades remain unchanged.

Casein — Business has been quiet during the past month, but stocks are small and the market generally has been firm and without any change from the quoted figures of 15c @ 15½c lb. Argentine exports of casein during the first quarter of 1929 amounted to 6,168 metric tons as compared with 5,004 tons during the corresponding period of 1928, and 5,628 tons during the first quarter of 1927. Shipments to the United States during the first quarter of this year amounted to 3,810 tons as compared with 3,274 tons during the same period of 1928. Total exports from the Argentine to this country during 1928 amounted to 10,829 tons, and during 1927 to 8,542 tons. Total imports of casein during April amounted to 3,323,520 pounds, valued at $410,673, according to the Department of Commerce.

Chlorine — Deliveries continue to go forward in large volume and conditions generally are very satisfactory, except on the West Coast where keen competition has unsettled things locally.

Copper Sulfate — The peak season for this material has practically past. It is noticeable that demand ceased earlier than usual, last year, for instance, remaining tight until the middle of August. But even a week before the close of the past month, it was noticeable that everything was about cleaned up. There is some possibility of further business if any great amount of rain should fall in the near future. The season as a whole has been dry and this has accounted for smaller requirements. However, preliminary estimates would seem to indicate that just as much material was consumed this year, but that the buying was spread over a longer period. There seems to be, judging yb the present likelihood, no pssibility of any price changes in either the metal or the sulfate and in fact but little activity is expected before November.

Dextrin — Although the corn market has been growing stronger, there has as yet been no effect upon this market which continues in routine fashion.

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
				Cellosolve (see Ethylene glycol mono ethyl ether)			
				Acetate (see Ethylene glycol mono ethyl ether acetate)			
.30	.26	.34	.26	Celluloid, Scraps, Ivory cs....lb.	.26	.30	.26
.20	.18	.18	.18	Shell, cases.....lb.	.18	.20	.20	.18
.32	.30	.34	.26	Transparent, cases.....lb.	.30	.32	.32	.30
1.40	1.40	1.40	1.40	Cellulose, Acetate, 50 lb kegs .lb.	1.20	1.25	1.25	1.20
.03½	.03	.03	.03	Chalk, dropped, 175 lb bbls...lb.	.03	.03¼	.03¼	.03
.04½	.04½	.02½	.02½	Precip, heavy, 560 lb cks...lb.	.02	.03½	.03½	.02
.03½	.02½	.04½	.04½	Light, 250 lb casks.....lb.	.02¼	.03½	.03½	.02¼
.19	.18	.18	.18	Charcoal, Hardwood, lump, bulk wks.....bu.	.18	.19	.19	.18
.06½	.06	.06	.06	Willow, powd, 100 lb bbl wks.....lb.	.06	.06½	.06½	.06
.05	.04	.04	.04	Wood, powd, 100 lb bbls...lb.	.04	.05	.05	.04
.03	.02	.03	.02½	Chestnut, clarified bbls wks,..lb.	.02½	.03	.02	.03½
.02	.01½	.02	.01½	25% tks wks.....lb.	.01¼	.02½	.02½	.01½
.04 4/5	.04 4/5	.05½	.05½	Powd, 60%, 100 lb bgs wks.lb.	.....	.04 4/5	.04 4/5	.04 4/5
.06	.05½	.06½	.06½	Powd, decolorized bgs wks..lb.	.05½	.06	.06	.05½
9.00	8.00	8.00	8.00	China Clay, lump, blk mines.ton	8.00	9.00	9.00	8.00
.02	.01½	.01½	.01½	Powdered, bbls.....lb.	.01¼	.02	.02	.01½
12.00	10.00	10.00	10.00	Pulverized, bbls wks.....ton	10.00	12.00	12.00	10.00
25.00	15.00	15.00	15.00	Imported, lump, bulk.....ton	15.00	25.00	25.00	15.00
.03½	.03	.03	.03	Powdered, bbls.....lb.	.03	.03½	.03½	.03
				Chlorine			
.09	.08	.08	.08	Chlorine, cyls 1c-1 wks contract .....lb.	.07½	.08½	.08½	.07½
.....	.....	.....	.....	cyls, cl wks,. contract ...lb.	.....	.04½	.04½	.04½
.03½	.03½	.05½	.04	Liq tank or multi-car lot cyls wks contract.....lb.	.....	.03	.03	.03
.07	.07	.07	.07	Chlorobenzene, Mono, 100 lb. drs 1c-1 wks.....lb.	.08½	.09½	.09½	.08½
.22	.20	.20	.20	Chloroform, tech, 1000 lb drs..lb.	.....	.16	.20	.16
1.35	1.00	1.00	1.00	Chloropicrin, comml cyls.....lb.	1.00	1.35	1.35	1.00
.29	.26	.27	.26	Chrome, Green, CP.....lb.	.26	.29	.29	.26
.11	.06½	.06½	.06½	Commercial.....lb.	.06½	.11	.11	.06½
.17	.15½	.17½	.16½	Yellow.....lb.	.17	.18	.18	.15
.05½	.04¾	.05	.04¼	Chromium, Acetate, 8% Chrome bbls.....lb.	.04¾	.05¼	.05¼	.04¾
.05½	.05½	.05½	.05½	20° soln, 400 lb bbls.....lb.	.....	.05½	.05½	.05½
.28	.27	.27	.27	Fluoride, powd, 400 lb bbl..lb.	.27	.28	.28	.27
.35½	.34½	.34½	.34½	Oxide, green, bbls.....lb.	.34½	.35½	.35½	.34½
9.50	9.00	9.50	9.00	Coal tar, bbls.....bbl	10.00	10.50	10.50	10.00
2.22	2.10	2.10	2.10	Cobalt Oxide, black, bags....lb.	2.10	2.22	2.22	2.10
.87	.84	.92	.77	Cochineal, gray or black bag..lb.	.....	.95	.95	.95
.86	.86	.92	.77	Teneriffe silver, bags.....lb.	.....	.95	.95	.95
				Copper			
17.00	12.90	13.57½	12.90	Copper, metal, electrol...100 lb.	.....	17.78	24.00	17.00
.17½	.16	.16¾	.06½	Carbonate, 400 lb bbls.....lb.	.19	.25	.25	.18
.28	.28	.28	.28	Chloride, 250 lb bbls.....lb.	.25	.28	.28	.25
.50	.48	.48	.48	Cyanide, 100 lb drs.....lb.	.50	.55	.60	.48
.17	.16½	.16½	.16½	Oxide, red, 100 lb bbls.....lb.	.24	.32	.32	.16½
.19	.18	.18	.17	Sub-acetate verdigris, 400 lb bbls.....lb.	.18	.19	.19	.18
5.50	5.05	5.00	4.75	Sulfate, bbls c-1 wks...100 lb.	.....	6.00	7.00	5.65
14.00	13.00	17.00	13.00	Copperas, crys and sugar bulk c-1 wks.....ton	13.00	14.00	14.00	13.00
1.35	1.25	1.25	1.25	Sugar, 100 lb bbls.....100 lb.	1.25	1.35	1.35	1.25
.42	.40	.40	.40	Cotton, Soluble, wet, 100 lb bbls.....lb.	.40	.42	.42	.40
.....	.....	42.00	20.00	Cottonseed, S. E. bulk c-1...ton	.....	.....	.....	.....
.....	.....	42.00	20.00	Meal S. E. bulk.....ton	.....	.....	.....	.....
38.00	36.00	35.00	21.50	7% Amm., bags mills...ton	37.50	38.00	38.00	37.50
.27½	.26	.27	.22	Cream Tartar, USP, 300 lb. bbls.....lb.	.....	.26½	.28	.26½
.42	.40	.40	.40	Creosote, USP, 42 lb cbys....lb.	.40	.42	.42	.40
.19	.17	.20	.20	Oil, Natural, 50 gal drs....gal.	.17	.19	.19	.17
.23	.21	.25	.25	10-15% tar acid.....gal.	.21	.23	.23	.21
.28	.25	.....	.....	25-30% tar acid.....gal.	.25	.28	.28	.25
.20	.17½	.17½	.17½	Cresol, USP, drums.....lb.	.14	.17	.17	.14
				Crotonaldehyde, 50 gal dr....lb.	.32	.36		
.17	.16	.17	.16	Cudbear, English.....lb.	.16	.17	.17	.16
.18½	.18½	.18½	.15	Cutch, Rangoon, 100 lb bales..lb.	.14	.16	.16	.14
.07	.06	.05	.05½	Borneo, Solid, 100 lb bale..lb.	.08	08½	.08½	.08
				Cyanamide, bulk c-1 wks Amm. .....lb.	.....	1.70	1.70	1.70
1.75	1.67½	1.82½	1.67½	Dextrin, corn, 140 lb bags.100 lb.	4.62	4.82	4.82	4.62
5.12	3.77	3.92	3.77	White, 130 lb bags.....100 lb.	4.57	4.77	4.77	4.57
5.07	3.72	3.87	3.72	Potato, Yellow, 220 lb bgs..lb.	.08	.09	.09	.08
.09	.08	.08½	.08½	White, 220 lb bags 1c-1....lb.	.08	.09	.09	.08
.09	.08	.08½	.08½	Tapioca, 200 lb bags 1c-1...lb.	.08	.08½	.08½	.08
.08½	.08	.08½	.08	Diaminophenol, 100 lb kegs...lb.	.....	3.80	3.80	3.80
.....	.....	3.80	3.80	Diamylphthalate, drs wks...gal.	.....	3.80	3.80	3.80
3.80	3.80	2.95	2.85	Dianisidine, 100 lb kegs.....lb.	3.00	3.10	3.10	3.00
2.90	2.85	3.25	3.25	Dibutylphthalate, wks.....lb.	.....	.26½	.26½	.26½
.28	.26½	.31½	.29½	Dibutyltartrate, 50 gal drs...lb.	.29½	.31½	.31½	.29½
.31½	.29½	.55	.55	Dichloroethylether, 50 gal drs lb.	.05	.07	.13	.05
.....	.....	.....	.....	Dichloromethane, drs wks....lb.	.55	.65	.65	.55
.65	.55	.23	.23	Diethylamine, 400 lb drs.....lb.	2.75	3.00	3.00	2.75
.25	.23	2.15	2.15	Diethylcarbonate, drs .....gal.	1.85	1.90	1.90	1.85
2.15	2.15	1.85	1.85	Diethylaniline, 850 lb drs.....lb.	.55	.60	.60	.55
2.00	1.85	.55	.55	Diethyleneglycol, drs.....lb.	.10	.12	.13	.10
.60	.55.	20	.20	Mono ethyl ether, drs....lb.	.13	.15	.15	.13
.15	.10	.....	.....	Mono butyl ether, drs....lb.	.28	.30	.30	.25
.35	.25	.....	.....	Mono methyl ether, 50 gal. dr.....lb.	.15	.18	.22	.15
.....	.....	.....	.....	Diethylene oxide, 50 gal dr....lb.	.....	.50	.50	.50
.....	.....	.....	.....	Diethylorthotoluidin, drs.....lb.	.64	.67	.67	.64
.67	.64	.64	.64	Diethyl phthalate, 1000 lb drums.....lb.	.24	.26	.26	.24
.26	.24	.25	.25	Diethylsulfate, technical, 50 gal drums.....lb.	.30	.35	.35	.30
.35	.30	.30	.30	Dimethylamine, 400 lb drs...lb.	.....	2.62	2.62	2.62
2 62	2.62	2.60	2.60	Dimethylaniline, 340 lb drs...lb.	.30	.32	.32	.30
.32	.30	.32	.30					

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - July 1929 $1.017

Egg Yolk — Has been in somewhat better supply and as a result prices are somewhat lower at 77c @ 79c lb.

Ethyl Acetate — The past month has witnessed considerable activity in the market for this material which is quite firm and in good condition. As of August 1, producers discontinued the gallon basis for quotations and announced a new price schedule according to pound. The new figures placed the tank price at 12.2c lb. and the drum price at 12.5c @ 12.9c lb.

Fish Scrap — Although dried remains unchanged, acid has been in better supply and as a result, prices are lower at $3.50 & 50 per unit.

Formaldehyde — Demand continued at rather better than the usual level for this season of the year, with prices prevailingly strong due to conditions in the raw material market. April shipments totalled 218,158 pounds, valued at $14,533.

Gums — Some traces of weakness in primary markets have brought about lower prices on some grades in the domestic market. It is thought in some quarters that factors in the primary markets have lowered prices in order to stimulate business in what is ordinarily a dull season, with a similar effect upon markets here. Mastic is lower at 58c @ 60c lb.; while certain grades of Manila and of Pontianak are also lower. Arrivals of gum at Antwerp from the Belgian Congo in May, according to trade estimates, reached 878 tons, as against 3,983 tons for April and 977 tons in March. Exports to the United States during the month totaled 691,870 pounds, bringing the quantity for the first five months of this year up to 3,137,447 pounds. Receipts of kauri gum at Auckland for the first quarter of this year totaled 805 tons, a decline of 191 tons over the corresponding period of 1928. Exports of gum from Auckland for the quarter increased to 1,106 tons, valued at $292,915 as compared with 934 tons for the 1928 quarter. Shipments to the United States during the first four months of 1928 and 1929 were, respectively, 1,790,851 pounds, value $249,348 and 1,340,500 pounds, value $206,024. The Kauri Gum Control Board continues to function as a buyer of gum, also as a centralized agency in keeping up a constant survey of the field and studying conditions affecting the industry and its marketing problems. The Control Board is not, however, making use of the great powers vested in it by law, says the Department of Commerce. The board

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
.50	.45	.45	.45	Dimethylsulfate, 100 lb drs...lb.	.45	.50	.50	.45
.16½	.15½	.15½	.15	Dinitrobenzene, 400 lb bbls...lb.	.15½	.16½	.16½	.15½
.19	.18	.18	.18	Dinitrochlorine, 300 lb bbl...lb.	.18	.19	.19	.18
.16	.15	.15	.15	Dintrochlorobenzene, 400 lb bbls.....lb.	.13	.15	.15	.13
.34	.32	.32	.32	Dinitronaphthalene, 350 lb bbls .....lb.	.34	.37	.37	.34
.32	.31	.31	.31	Dinitrophenol, 350 lb bbls....lb.	.31	.32	.32	.31
.19	.18	.18	.15	Dinitrotoluene, 300 lb bbls...lb.	18	.19	.19	.18
.90	.48	1.05	.85	Diorthotolyguanidine, 275 lb bbls wks.....lb.	.42	.46	.49	.42
.....	.....	.....	.....	Dioxan (See Diethylene Oxide)	.....	.....	.....	.....
.47	.45	.18	.45	Diphenyl.....lb.	.40	.50	.50	.40
.72	.40	.....	.....	Diphenylamine.....lb.	.....	.40	.47	.40
.30	.26	.26	.26	Diphenylguanidine, 100 lb bbl lb.	.30	.35	.40	.30
62.00	58.00	49.00	41.00	Dip Oil, 25%, drums.....lb.	.26	.30	.30	.26
.05½	.05	.04	.04	Divi Divi pods, bgs shipmt..ton	.....	48.00	57.00	48.00
.82	.73	.84	.72	Extract.....lb.	.05	.05½	.05½	.05
1.75	1.7	2.00	1.75	Egg Yolk, 200 lb cases.....lb.	.77	.79	.84	.77
.38	.37	.45	.37	Epsom Salt, tech, 300 lb bbls c-1 NY.....100 lb.	1.70	1.75	1.75	1.75
1.05	.75	.90	.90	Ether, USP, 1880, 50 lb drs..lb.	.38	.39	.39	.38
1.25	1.10	1.10	1.03	Ethyl Acetate, 85% Ester, ... tanks.....lb.	.....	12.02	12.02	12.02
.....	.....	.....	.....	drums.....lb.	12.05	12.09	12.09	12.05
1.11	1.05	1.05	1.05	Acetoacetate, 50 gal drs...gal.	.65	.68	.68	.65
.70	.70	.50	.50	Benzylaniline, 300 lb drs...lb.	1.05	1.11	1.11	1.05
.....	.....	.....	.....	Bromide, tech, drums .....lb.	.50	.55	.55	.50
.22	.22	.22	.22	Carbonate, 90%, 50 gal drs gal.	1.85	1.90	1.90	1.85
.....	.....	.....	.....	Chloride, 200 lb. drums....lb.	.....	.22	.22	.22
.....	.....	.....	.....	Chlorocarbonate, 50 gal dr .gal.	.35	.40	.40	.35
				Ether, Absolute, 50 gal drs..lb.	.50	.52	.52	.50
3.50	3.50	3.50	3.50	Furoate, 1 lb tins .....lb.	.....	5.00	5.00	5.00
.30	.30	.30	.30	Lactate, drums works.....lb.	.25	.29	.35	.25
.55	.45	.45	.45	Methyl Ketone, 50 gal drs..lb.	.....	.30	.30	.30
.36	.30	.....	.....	Oxalate, drums works.....lb.	.45	.55	.55	.45
.70	.70	.70	.70	Oxybutyrate, 50 gal drs wks.lb.	.....	.30½	.36	.30
				Ethylene Bromide, 60 lb dr...lb.	.....	.70	.70	.79
.85	.75	.75	.75	Chlorhydrin, 40%, 50 gal drs chloro. cont.....lb.	.75	.85	.85	.75
.11	.07	.15	.11	Dichloride, 50 gal drums...lb.	.05	.07	.10	.05
.40	.25	.30	.30	Glycol, 50 gal drs wks.....lb.	.25	.28	.30	.25
.27	.31	.....	.....	Mono Butyl Ether drs wks.	.23	.27	.31	.23
.20	.24	.....	.....	Mono Ethyl Ether drs wks	.16	.20	.24	.16
.23	.26	.....	.....	Mono Ethyl Ether Acetate dr. wks.....	.19	.23	.26	.19
				Mono Methyl Ether, drs.lb.	.19	.23	.23	.19
				Oxide, cyl.....lb.	.....	2.00		
.65	.62	.62	.62	Ethylidenaniline.....lb.	.62	.65	.65	.62
25.00	20.00	20.00	20.00	Feldspar, bulk.....ton	25.00	20.00	25.00	20.00
21.00	15.00	15.00	15.00	Powdered, bulk works.....ton	15.00	.21	21.00	15.00
.09	.07½	.07½	.07½	Ferric Chloride, tech, crystal 475 lb bbls.....lb.	.07¼	.09	.09	.07½
5.50&10	4.90&10	5.60	4.15	Fish Scrap, dried, wks.....unit	.....	4.00&10	4.00&10	4.00&10
4.75&50	4.00&50	3.50	4.24	Acid, Bulk 7 & 3½% delivered Norfolk & Balt. basis...unit	.....	3.50&50	4.00&50	3.50&50
1.15	1.10	1.10	.90	Flavine, lemon, 55 lb cases...lb.	1.10	1.15	1.15	1.10
1.15	1.10	1.10	.85	Orange, 70 lb cases.....lb.	1.10	1.15	1.15	1.10
				Flaxseed.....lb.	.....	.....		
.....	.....	.....	.....	Ex-dock.....ton	.....	25.00	25.00	25.00
25.00	25.00	25.00	25.00	Fluorspar, 98%, bags.....	41.00	46.00	46.00	41.00
				Formaldehyde				
.....	.....	.....	.....	Formaldehyde, aniline, 100 lb.	.....	.....	.....	.....
.42	.39	.39	.39	drums.....lb.	.39	.42	.42	.39
.09	.08½	.11½	.08½	USP, 400 lb bbls lc-1 wks..lb.	.09½	.10	.10	.09½
.04	.02½	.02½	.02½	Fossil Flour.....lb.	.02½	.04	.04	.02½
20.00	15.00	15.00	15.00	Fullers Earth, bulk, mines ..ton	15.00	20.00	20.00	15.00
30.00	25.00	25.00	25.00	Imp. powd c-1 bags.....ton	25.00	30.00	30.00	25.00
.19½	.1[illegible]½	.17½	.17½	Furfural 500 lb drums.....lb.	.17½	.19½	.19½	.17½
.....	.....	.....	.....	Furfuramide (tech) 100 lb dr..lb.	.....	.30	.30	.30
.....	.....	.....	.....	Furfuryl Acetate, 1 lb tins....lb.	.....	5.00	5.00	5.00
.....	.....	.....	.....	Alcohol, (tech) 100 lb dr....lb.	.....	.50	.50	.50
.....	.....	.....	.....	Furoic Acid (tech) 100 lb dr...lb.	.....	.50	1.00	.50
1.35	1.35	1.69	1.35	Fusel Oil, 10% impurities ...gal.	.....	1.35	1.35	1.35
.05	.04	.04	.04	Fustic, chips.....lb.	.04	.05	.05	.04
.22	.20	.20	.20	Crystals, 100 lb boxes.....lb.	.20	.22	.22	.20
.10	.09	.09	.09	Liquid, 50°, 600 lb bbls....lb.	.09	.10	.10	.09
.23	.20	.20	.20	Solid, 50 lb boxes.....lb.	.14	.16	.16	.14
32.00	30.00	30.00	30.00	Sticks.....ton	25.00	26.00	26.00	25.00
.52	.50	.50	.50	G Salt paste, 360 lb bbls.....lb.	.45	.50	.52	.45
.21	.20	.20	.20	Gall Extract.....lb.	.20	.21	.21	.20
.09	.08	.08	.06	Gambier, common 200 lb cs...lb.	.06	.07	.07	.06
.14	.12	.12	.12	25% liquid, 450 lb bbls....lb.	.12	.14	.14	.12
.12	.11	.23	.11	Singapore cubes, 150 lb bg..lb.	.08½	.09	.09	.08½
.50	.45	.45	.30	Gelatin, tech, 100 lb cases....lb.	.45	.50	.50	.45
3.24	3.14	3.14	3.14	Bags, c-1 NY.....100 lb.	3.14	3.24	3.24	3.14
1.00	.70	1.05	1.05	Glauber s Salt, tech, c-1 wks.....100 lb.	1.00	1.70	1.70	.70
3.34	3.24	3.24	3.24	Glucose (grape sugar) dry 70-80° bags c-1 NY.....100 lb.	3.24	3.34	3.34	3.20
3.14	3.14	3.14	3.14	Tanner's Special, 100 lb bags .....100 lb.	.....	3.14	3.14	3.14
.24	.20	.20	.20	Glue, medium white, bbls ...lb.	.20	.24	.24	.20
.26	.22	.22	.22	Pure white, bbls.....lb.	.22	.26	.26	.22
.19	.15	.29	.22	Glycerin, CP, 550 lb drs.....lb.	.14	.14½	.16	.14
.15	.11½	.25	.17	Dynamite, 100 lb drs.....lb.	.10½	.11	.12½	.10½
.10½	.08½	.....	.....	Saponification, tanks.....lb.	.07½	.08	.08½	.07½
.09½	.07½	.....	.....	Soap Lye, tanks.....lb.	.06½	.07	.07½	.06½
35.00	15.00	15.00	15.00	Graphite, crude, 220 lb bgs...ton	15.00	35.00	35.00	15.00
.09	.06	.05	.05	Flake, 500 lb bbls.....lb.	.06	.09	.09	.06
				Gums				
.04½	.03½	.03½	.03½	Gum Accroides, Red, coarse and fine 140-150 lb bags.....lb.	.03½	.04½	.04½	.03
.06½	.06½	.06½	.06	Powd, 150 lb bags.....lb.	.06	.06½	.06½	.06½

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - July 1929 $1.017

also continues to operate as a trader in gum and is now endeavoring to secure the sanction of the Government to authorize it to make advances up to 75 per cent on the estimated value of gum placed in the Board's hands, the limit at present being 50 per cent.

Gypsum — The quantity of gypsum mined in the United States in 1928 was 5,102,250 short tons, a decrease of 244,638 tons, or 5 per cent, compared with 1927. This production, however, has been exceeded only in 1925, 1926 and 1927, and was more than twice as large as that of 1918. The decrease in production of domestic crude gypsum and in the sales of domestic gypsum was offset to some extent by the increase in the quantity of crude gypsum imported and sold. In 1928, nine importers with plants in nine States, namely, California, Connecticut, New Hampshire, New Jersey, New York, Pennyslvania, Vermont, Virginia, and Washington, reported to the Bureau of Mines that they imported 954,000 short tons of crude gypsum, an increase of 21 per cent compared with 1927.

Leunasaltpeter — New schedules for the fertilizer year July 1929 to July 1930 have been announced by producers of synthetic nitrogen products. The schedule, which is slightly lower in price as compared with last season's prices, applies to ammonia-sulfate-nitrate, or Leunasalpeter, 3,000 tons minimum, 26 per cent nitrogen, one-quarter nitrate and three-quarters ammonia, packed in single 100-kilo bags net weight, per ton of 2,000 pounds, c. i. f. North Atlantic ports: Shipment from abroad during July, $52; August, $52.40; September, $52.80; October, $53.50; November, $54.74; December, $55.85; January, $57; February-June, 1930, $55.60. For South Atlantic or Gulf ports: July, $52.30; August, $52.70; September, $53.10; October, $53.80; November, $55; December, $56.15; January, $57.30; February-June, 1930, $57.90. Prices for 1,000-ton lots are 25c per ton higher than the foregoing; 500-ton lots, 35c per ton higher; 250-ton lots, 50c higher; 100-ton lots, 75c higher and carloads, or less than 100 tons, $1 per ton higher.

Mercury — Has been exceptionally scarce during the past month with but little stocks available. Prices are undoubtedly on the upswing and in some quarters it is predicted that $250 flask mercury will result. Quotations are nominally at $122.00 @ $126.00. American production is sold up and consequently imported material is in control of

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
.20	.18	.18	.18	Yellow, 150-200 lb bags....lb.	18	.20	.20	.18
.40	.35	.40	.35	Animi (Zanzibar) bean & pea 250 lb cases.....lb.	.35	.40	.40	.35
.55	.50	.60	.50	Glassy, 250 lb cases.....lb.	.50	.55	.55	.50
.12	.09	.09	.09	Asphaltum, Barbadoes (Manjak) 200 lb bags.....lb.	.09	.12	.12	.09
.17	.15	.15	.15	Egyptian, 200 lb cases.....lb.	.15	.17	.17	.15
65.00	55.00	55.00	55.00	Gilsonite Selects, 200 lb bags .....ton	58.00	65.00	65.00	58.00
.26	.22½	.26½	.26½	Damar Batavia standard 136, lb cases.....lb.	.23	.24	.26	.23
.11	.10½	.10½	.07	Batavia Dust, 160 lb bags.....lb.	.10½	.11	.11	.10½
.17½	.16	.18½	.17½	E Seeds, 136 lb cases.....lb.	.16	.16½	.17½	.16
.14½	.13	.14	.09	F Splinters, 136 lb cases and bags.....lb.	.13	.13½	.13½	.13
.30½	.29½	.34	.33½	Singapore, No 1, 224 lb cases lb.	.28	.28½	.30½	.28
.24	.20	.22½	.21	No. 2, 224 lb cases.....lb.	.22	.22½	.24	.22
.15	.13½	.14	.11	No. 3, 180 lb bags.....lb.	.11½	.12	.14	.11½
.48	.33	.35	.30	Benzoin Sumatra, U. S. P. 120 lb cases.....lb.	.38	.40	.40	.38
.15	.14	.14	.12	Copal Congo, 112 lb bags, clean opaque.....lb.	.16	.17	.17	.14
.09	.08¾	.08¾	.08¾	Dark, amber.....lb.	.08¾	.09	.09	.08¾
.14	.12½	.12½	.12½	Light, amber.....lb.	.12½	.14	.14	.12½
.36	.35	.35	.35	Water white.....lb.	.35	.36	.36	.35
.65	.58	.....	.....	Mastic.....lb.	.58	.60	.62	.58
.17½	.16	.16	.16	Manila, 180-190 lb baskets Loba A.....lb.	.17	.17½	.17½	.17
.16½	.15	.15	.15	Loba B.....lb.	.15½	.16	.16½	.15½
.14	.13	.14½	.13	Loba C.....lb.	.13½	.14	.14½	.13½
.19	.16	.16	.16	Pale bold, 224 lb cs.....lb.	.17	.19	.19	.17
.13½	.12	.14	.12	Pale nubs.....lb.	.13	.13½	.13½	.13
.11	.07½	.07½	.07½	East Indies chips, 180 lb bags lb.	.10	.11	.11	.10
.21	.17	.....	.....	Pale bold, 180 lb bags....lb.	.20	.21	.21	.20
.16	.14	.17	.17	Pale nubs.....lb.	.15	.16	.16	.15
.....	.....	.....	.....	Pontianak, 224 lbs cases....lb.	.....	.....	.....	.....
.25½	.22	.29	.25	Pale bold gen No 1.....lb.	.20	.21	.23	.20
.15	.13	.19	.13	Pale gen chips spot.....lb.	.14½	.15	.15	.14½
.14	.13	.14	.13	Elemi, No. 1, 80-85 lb cs...lb.	.13½	.14	.14	.13½
.13½	.13	.13	.12	No. 2, 80-85 lb cases....lb.	.13	.13½	.13½	.13
.13	.12	.13	.11	No. 3, 80-85 lb cases.....lb.	.12	.13	.13	.12
.57	.50	.67½	.57	Kauri, 224-226 lb cases No. 1 .....lb.	.50	.57	.57	.50
.38	.35	.44½	.38	No. 2 fair pale.....lb.	.35	.38	.38	.35
.12	.10	.14½	.10	Brown Chips, 224-226 lb cases.....lb.	.10	.12	.12	.10
.....	.....	.42	.38	Bush Chips, 224-226 lb	.....	.....		
.40	.38	.....	.....	cases.....lb.	.38	.40	.40	.38
.....	.....	.....	.....	Pale Chips, 224-226 lb cases				
.26	.24½	.31½	.24½	.....lb.	.24½	.26	.26	.24½
.60	.26	.27	.25	Sandarac, prime quality, 200 lb bags & 300 lb casks...lb	.68	.70	.70	.60
.....	.....	.....	.....	Helium, 1 lit. bot. .....lit	.....	25.00	.20	.17
.20	.17	.12	.12	Hematine crystals, 400 lb bbls lb.	.17	.20	.11	.17
.11	.11	.09	.09	Paste, 500 bbls.....lb.	.....	.11	.11	.11
.03½	.03½	.03½	.03½	Hemlock 25%, 600 lb bbls wks lb.	.03½	.03½	.03½	.03½
16.00	16.00	16.00	16.00	Bark.....ton	.....	16.00	17.00	16.00
.60	.60	.60	.45	Hexalene, 50 gal drs wks.....lb.	.....	.60	.60	.60
.56	.62	.80	.62	Hexamethylenetetramine, drs .lb.	.48	.50	.58	.48
4.00	4.00	3.35	2.75	Hoof Meal, fob Chicago....unit	.....	3.75	4.00	3.75
.....	.....	3.90	3.0	South Amer. to arrive....unit	.....	3.75	3.90	3.75
.26	.24	.30	.22	Hydrogen Peroxide, 100 vol, 140 lb cbys.....lb.	.24	.26	.26	.24
.15	.12	.12	.12	Hypernic, 51°, 600 lb bbls....lb.	.12	.15	.15	.12
1.30	1.28	1.28	1.20	Indigo Madras, bbls.....lb.	1.28	1.30	1.30	1.28
.18	.15	.15	.18	20% paste, drums.....lb.	.15	.18	.18	.15
.08	.07½	.07½	.07½	Solid, powder.....lb.	.07½	.08	.08	.07½
				Iron Chloride, see Ferric or Ferrous				
.10	.09	.09	.09	Iron Nitrate, kegs.....lb.	.09	.10	.10	.09
3.25	2.50	2.50	2.50	Coml, bbls.....100 lb.	2.50	3.25	3.25	2.50
.12	.10	.10	.10	Oxide, English.....lb.	.10	.12	.12	.10
.03½	.02½	.02½	.02½	Red, Spanish.....lb.	.02½	.03½	.03½	.02½
.90	.85	.85	.85	Isopropyl Acetate, 50 gal drs gal.	.85	.90	.90	.85
.20	.17	.29	.17	Japan Wax, 224 lb cases.....lb.	.....	.17	.18	.17
70.00	60.00	60.00	60.00	Kieselguhr, 95 lb bgs NY....ton	60.00	70.00	70.00	60.00
.....	.....	14.00	13.00	Lead Acetate, bbls wks...100 lb.	13.00	13.50	13.50	13.00
13.50	13.00	14.00	13.00	White crystals, 500 lb bbls wks.....100 lb.	14.00	14.50	14.50	14.00
.15	.13	.15½	.13½	Arsenate, drs 1c-1 wks.....lb.	.13	.15	.15	.13
				Dithiofuroate, 100 lb dr....lb.	.....	1.00		
6.25	6.25	7.80	6.20	Metal, c-1 NY.....100 lb.	.....	7.75	7.75	6.10
.14	.14	.14	.14	Nitrate, 500 lb bbls wks....lb.	.....	.14	.14	.14
.18	.17½	.17½	.17½	Oleate, bbls.....lb.	.17½	.18	.18	.17½
.08¾	.08½	.10¾	.08¾	Oxide Litharge, 500 lb bbls.lb.	.....	.08¾	.08¾	.08½
.09¾	.09¼	.11¼	.09¾	Red, 500 lb bbls wks....lb.	.....	.09¾	.09¾	.09¼
.09	.09	.09¾	.09	White, 500 lb bbls wks...lb.	.....	.09¾	.09¾	.09
.08½	.08½	.09	.08½	Sulfate, 500 lb bbls wk...lb.	.....	.08¾	.08¾	.08½
				Leuna saltpetre, bags c.i.f...ton	.....	52.40	52.40	52.00
				S. points c. i. f.....ton	.....	52.70	52.70	52.30
4.50	4.50	4.50	4.50	Lime, ground stone bags.....ton	.....	4.50	4.50	4.50
1.05	1.05	1.05	1.05	Live, 325 lb bbls wks...100 lb.	.....	1.05	1.05	1.05
				Lime Salts, see Calcium Salts				
.17	.15	.15	.15	Lime-Sulfur soln bbls.....gal.	.15	.17	.17	.15
.06½	.06½	.06½	.06½	Lithopone, 400 lb bbls 1c-1 wks .....lb.	.....	.05½	.06½	.05½
.08½	.08½	.08½	.08½	Logwood, 51°, 600 lb bbls.....lb.	.08½	.08¾	.08½	.08½
.03½	.03	.03	.03	Chips, 150 lb bags.....lb.	.03	.03¾	.03½	.03
.12½	.12½	.12	.12	Solid, 50 lb boxes.....lb.	.....	.12¾	.12½	.12½
27.00	26.00	26.00	26.00	Sticks.....ton	24.00	26.00	26.00	24.00
.08	.07½	.07½	.07½	Lower grades.....lb.	.07½	.08	.08	.07½
.30	.30	.30	.30	Madder, Dutch.....lb.	.22	.25	.25	.22
50.00	48.00	48.00	48.00	Magnesite, calc, 500 lb bbl...ton	50.00	60.00	60.00	50.00
				Magnesium				
.06½	.06	.06½	.06	Magnesium Carb, tech, 70 lb bags NY.....lb.	06	.06½	.06½	.06

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - July 1929 $1.017

the market at present. Concerning domestic production, the Department of Commerce says that "Mercury is one of several products for which the United States is at present partially dependent on foreign sources of supply. The United States produces only 7½ per cent of the total world output while consuming about 25 per cent. Spain and Italy are the chief factors in mercury production, their combined output in 1927 representing about 90 per cent of world production. During that year the total world output of mercury amounted to 5,600 tons. Together with the United States, Germany and the United Kingdom are the chief users of this metal." According to this statement, domestic production only supplies about one-third of domestic demands. However, it must be pointed out that the period under discussion is 1927. During last year, much new domestic production came into the market attracted by the prevailing high quotations and increased the ratio of domestic supply in relation to demand to about half.

Methanol — The feature of the market during the past month was perhaps the news that a new producer was to enter the field of synthetic material. Announcement of prices was awaited eagerly and the quotations when made public were the subject of considerable comment.

Phenol — No relief seems probable in the near future as producers are reported to be sold up until close to the end of the year. Although quoted prices have not changed, such scarce supplies as are available on spot are commanding 4c @ 5c lb. above quoted prices.

Resorcinol — Imports into the United States, entered for consumption during the first five months of 1929, amounted to 37,980 pounds. Of this amount 36,803 pounds came from France and 1,177 from Germany. During the same period of 1928 there were entered for consumption 20,225 pounds and for the entire year, 46,515 pounds. In 1927 there were imported 39,115 pounds and 5,070 pounds in 1926.

Rosin — The market has been more active and sales made in increasing volume during the past month. As a result of this improved tone, prices on practically all grades have advanced 5c @ 65c unit. Advances have chiefly been made by the lower grades which have been in heavier demand.

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
				Chloride flake, 375 lb. drs c-l wks.....ton	.....	36.00	36.00	36.00
37.00	27.00	37.00	37.00	Important shipment....ton	.....	33.00	33.00	33.00
33.00	33.00	33.00	33.00	Fused, imp, 900 lb bbls NY ton	.....	31.00	31.00	31.00
31.00	31.00	31.00	31.00	Fluosilicate, crys, 400 lb bbls wks.....lb.	.10	.10½	.10½	.10
.10½	.10	.10	.10	Oxide, USP, light, 100 lb bbls .....lb.	.....	.42	.42	.42
.42	.42	.42	.42	Heavy, 250 lb bbls.....lb.	.....	.50	.50	.50
.50	.50	.50	.50	Peroxide, 100 lb cs.....lb.	.....	1.25	1.25	1.25
.....	.....	.....	.....	Silicofluoride, bbls.....lb.	.09½	.10½	.10½	.09½
.10½	.09½	.12½	.09½	Stearate, bbls.....lb.	.25	.26	.26	.25
.25	.23	.23	.23	Manganese Borate, 30%, 200 lb bbls.....lb.	.....	.19	.24	.19
.24	.24	.24	.24	Chloride, 600 lb casks.....lb.	.08	.08½	.08½	.08
.08½	.08	.08	.08	Dioxide, tech (peroxide) drs lb.	.04½	.06	.06	.04½
.....	.....	.05	.04½	Ore, powdered or granular				
.50	.35	.....	.....	75-80%, bbls.....lb.	.03	.03½	.03½	.03
.03½	.03	.03	.03	80-85%, bbls.....lb.	.04	.04½	.04½	.04
.04½	.04	.04	.04	85-88%, bbls.....lb.	.05	.05½	.05½	.05
.05½	.05	.05	.05	Sulfate, 550 lb drs NY.....lb.	.08	.08½	.08½	.08
.07½	.07	.07	.07	Mangrove 55%, 400 lb bbls...lb.	.03½	Nom.	Nom.	.03½
Nom.	.03½	.03½	.03½	Bark, African.....ton	.....	30.00	35.00	30.00
45.00	39.000	034.00 0	1 3.	Marble Flour, bulk.....ton	14.00	15.00	15.00	14.00
12.00	10.00	10.00 5	.	Mercurous chloride .....lb.	.....	2.05	2.05	2.05
132.00	121.00	129 99.00	.00	Mercury metal.....75 lb flask	122.00	125.60	125.60	120.00
.74	.72	.72	.72	Meta-nitro-aniline.....lb.	.70	.72	.74	.70
1.80	1.50	1.70	1.70	Meta-nitro-para-toluidine 200 lb. bbls.....lb.	1.50	1.55	1.55	1.50
.94	.90	.90	.90	Meta-phenylene-diamine 300 lb. bbls.....lb.	.84	.90	.90	.84
.74	.72	.72	.72	Meta-toluene-diamine, 300 lb bbls.....lb.	.70	.72	.72	.70

Methanol

				Methanol, (Wood Alcohol),....				
.58	.46	.80	.55	95%.....gal.	.55	.60	.65	.55
.60	.47	.87	.57	97%.....gal.	.57	.62	.65	.57
.63	.44	.....	.....	Pure.....gal.	.60	.65	.68	.60
.58	.48	.....	.....	Synthetic, drums c-l.....gal.	.63	.66	.66	.63
.75	.45	.80	.75	Denat. gre. tanks.....gal.	.60	.62	.62	.60
.95	.95	.95	.95	Methyl Acetate, drums.....gal.	.....	.95	.95	.95
.90	.68	.88	.75	Acetone, 100 gal drums...gal.	.83	.85	.85	.83
.95	.85	1.00	.85	Anthraquinone, kegs.....lb.	.85	.95	.95	.85
.....	.....	.....	.....	Cellosolve, (See Ethylene Glycol Mono Methyl Ether)	.....	.....	.60	.55
60	.55	.55	55	Chloride, 90 lb cyl.....lb.	.55	.60	.....	.....
				Furoate, tech., 50 gal. dr., .lb.	.....	.50	.50	.50
80.00	65.00	.03½	.03½	Mica, dry grd. bags wks.....lb.	65.00	80.00	80.00	65.00
115.00	110.00	.05½	.05½	Wet, ground, bags wks.....lb.	110.00	115.00	115.00	110.00
.....	.....	3.00	3.00	Michler's Ketone, kegs.....lb.	.....	3.00	3.00	3.00
.75	.70	.70	.70	Monochlorobenzene, drums see, Chorobenzene, mono.....lb.	.70	.75	.75	.70
1.05	1.05	1.05	1.05	Monoethylorthotoluidin, drs. lb.	.....	1.05	1.05	1.05
4.20	3.95	3.95	3.95	Monomethylaniline, 900 lb dr .....lb.	3.95	4.20	4.20	3.95
.07	.06½	.06½	.06½	Monomethylparaminosufate 100 lb drums.....lb.	.06½	.07	.07	.06½
.04½	.04½	.04	.04	Montan Wax, crude, bags....lb.	.04½	.04½	.04½	.04½
.08½	.08	.08	.08	Myrobalans 25%, liq bbls....b	.08	.08½	.08½	.08
50.00	42.00	43.50	41.00	50% Solid, 50 lb boxes.....lb.	.....	42.00	43.00	40.00
40.00	32.50	37.00	23.50	J1 bags.....ton	.....	29.00	40.00	29.00
40.00	32.50	37.00	30.00	J 2 bags.....ton	.....	29.00	34.00	29.00
.18	.18	.21	.18	R 2 bags.....ton	.....	29.00	34.00	29.00
.06	.05½	.06	.05½	Naphtha, v. m. & p. (deodorized) bbls.....gal.	.....	.16	.18	.16
.04½	.04½	.04½	.04½	Naphthalene balls, 250 lb bbls wks.....lb.	.....	.05½	.05½	.05½
.05	.05	.05	.04½	Crushed, chipped bgs wks..lb.	.....	.04½	.04½	.04½
.24	.21	.21	.21	Flakes, 175 lb bbls wks....lb.	.....	.05	.05	.05
.38	.35	.35	.35	Nickel Chloride, bbls kegs....lb.	.21	.24	.24	.21
.09½	.09	.09	.08½	Oxide, 100 lb kegs NY.....lb.	.37	.40	.40	.37
.09	.08½	.08½	.08	Salt bbl. 400 bbls lb NY...lb.	.....	.13	.13	.13
				Single, 400 lb bbls NY.....lb.	.....	.13	.13	.13
1.30	1.25	1.25	1.10	Nicotine, free 40%, 8 lb tins, cases.....lb.	1.25	1.30	1.30	1.25
1.20	.98½	1.10	1.10	Sulfate, 10 lb tins.....lb.	.98½	1.20	1.20	.98½
14.00	13.00	13.00	13.00	Nitre Cake, bulk .....ton	16.00	18.00	18.00	12.00
.10½	.10½	10½	.09½	Nitrobenzene, redistilled, 1000 lb drs wks.....lb.	.10½	.10½	.10½	.10½
Nom.	.40	.40	.40	Nitrocellulose, regular drums wks.....lb.	.40	Nom.	Nom.	.40
Nom.	.55	.55	.55	Low viscosity (soln only) Grade 1 drums, wks.....lb.	.55	Nom.	Nom.	.55
Nom.	.50	.50	.50	Grade 2 drums, wks.....lb.	.50	Nom.	Nom.	.50
4.00	3.35	3.60	3.35	Nitrogenous Material, bulk..unit	.....	3.65	4.00	3.65
.25	.25	.25	.25	Nitronaphthalene, 550 lb bbls.lb.	.....	.25	.25	.25
.15	.14	.14	.14	Nitrotoluene, 1000 lb drs wks.lb.	.14	.15	.15	.14
Nom.	.25	.25	.25	Nutgalls Aleppy, bags.....lb.	.16	.16½	.16½	.16
.18	.17	.17	.17	Chinese, bags.....lb.	.12	.13	.13	.12
.24	.22	.22	.22	Powdered, bags.....lb.	.22	.24	.24	.22
.03½	.03½	.03½	.03½	Oak, tanks, wks.....lb.	.....	.03½	.03½	.03½
.04½	.04	.04	.04	23-25% liq., 600 lb bbl wk lb.	.04	.04½	.04½	.04
50.00	45.00	45.00	45.00	Oak Bark, ground.....ton	30.00	35.00	50.00	30.00
23.00	20.00	20.00	20.00	Whole.....ton	20.00	23.00	23.00	20.00
.13½	.13	.14½	.13	Orange-Mineral, 1100 lb casks NY.....lb.	.12½	.13½	.13½	.12½
2.25	2.20	2.20	2.20	Orthoaminophenol, 50 lb kgs..lb.	2.20	2.25	2.25	2.20
2.50	2.35	2.50	2.35	Orthoanisidine, 100 lb drs....lb.	2.50	2.60	2.60	2.50
.65	.50	.50	.50	Orthochlorophenol, drums....lb.	.50	.65	.65	.50
.28	.18	.18	.18	Orthocresol, drums.....lb.	.18	.28	.28	.18
.07	.06	.06	.06	Orthodichlorobenzene, 1000 lb drums.....lb.	.07	.10	.10	.07
.35	.32	.32	.32	Orthonitrochlorobenzene, 1200 lb drs wks.....lb.	30	.33	.33	.30

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Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - July 1929 $1.017

Shellac — Has been unchanged and in steady demand with but little change in prices. Bone dry is lower at 56c lb. and TN is higher at 44c, while the other grades remain unchanged.

Soda Ash — Continues to hold its strong position with shipments exceeding the volume of last year.

Soda Caustic — Like ash, continues to surpass previous records for the period of any previous year since the War. Is moving in great shape and keeping ahead of the most optimistic forecasts.

Sodium Chlorate — Unexpected demand for this material as a weed killer has lead to a considerable quantity of import as well as heavy domestic business. The market is very firm with the domestic material commanding a higher price than imported.

Sodium Nitrate — Of course the chief subject of interest in this market during the past month has been the international agreement arrived at between producers of the natural and of the synthetic product. According to Aikman's half-yearly report, the productive capacity of the "big three", (Chilean Nitrate, I. G. and I. C. I.) together with that of the Norwegian producers of Synthetic Nitrogen and the producers of by-product Sulphate of Ammonia in Germany and the United Kingdom, who already work in agreement with the above group, represents about 70 per cent of the world's Nitrogen production. Of the remaining 30% about one-third is produced in the United States and is prohibited under the Sherman law from entering a cartel which will control prices in that country, but it is believed that the large majority of the remainder will at an early date come into line, so that it is confidently expected that the production of Nitrogen will in future be regulated to the world's requirements. It is significant that synonymously with the signing of the agreement prices of the various products have been reduced by approximately 10s. per ton, the reduction by the Chilean producers having been facilitated by the promise of increased assistance from the Chilean Government.

During the year under review the production of Nitrogen, both synthetic and the natural product of Chile, has continued to expand and a small increase has also taken place in by-product Sulfate of Ammonia. Consumption has also increased substantially, as shown by the following table giving the estimated con-

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
				Orthonitrotoluene, 1000 lb drs wk.....lb.	.17	.18	.18	.17
.18	.17	.13	.13	Orthonitrophenol, 350 lb dr...lb.	.85	.90	.90	.85
.90	.85	.85	.85	Orthotoluidine, 350 lb bbl 1c-1 lb.	.25	30	.30	.25
.31	.29	.29	.25	Orthonitroparachlorphenol, tins .....lb.	.70	.75	.75	.70
.75	.70	.70	.70	Osage Orange, crystals.....lb.	.16	.17	.17	.16
.17	.16	.16	.16	51 deg. liquid.....lb.	.07	.07½	.07½	.07
.07	.07	.07	.07	Powdered, 100 lb bags.....lb.	.14½	.15	.15	.14½
.15	.14½	.14½	.14½	Paraffin, refd, 200 lb cs slabs				
.06¾	.06¾	.06¾	.06¾	123-127 deg. M. P.....lb.	.06	.06¼	.06¼	.06¼
.07¼	.07¼	.07¼	.07¼	128-132 deg. M. P.....lb.	.06¼	.06¾	.07	.06¾
.08¼	.08	.08	.08	133-137 deg. M. P.....lb.	.07¼	.07¼	.07¾	.07¼
.10	.08¾	.08¾	.08¾	138-140 deg. M. P.....lb.	.08	.09	.09	.08
.28	.20½	.29	.26	Para Aldehyde, 110-55 gal drs..lb.	.20½	.23	.28	.20½
1.05	1.00	1.00	1.00	Aminoacetanilid, 100 lb bg..lb.	1.00	1.05	1.05	1.00
1.30	1.25	1.25	1.25	Aminohydrochloride, 100 lb kegs.....lb.	1.25	1.30	1.30	1.25
1.15	1.15	1.15	1.15	Aminophenol, 100 lb kegs..lb.	.99	1.02	1.15	.99
.65	.50	.50	.50	Chlorophenol, drums.....lb.	.50	.65	.65	.50
.....	.....	.12	.12	Coumarone, 330 lb drums..lb.	.....	.....	.....	.....
2.50	2.25	2.25	2.25	Cymene, refd, 110 gal dr..gal.	2.25	2.50	2.50	2.25
.20	.17	.17	.17	Dichlorobenzene, 150 lb bbls wks.....lb.	.17	.20	.20	.17
.55	.50	.53	.50	Nitroacetanilid, 300 lb bbls.lb.	.50	.55	.55	.50
.59	.48	.52	.52	Nitroaniline, 300 lb bbls wks .....lb.	.48	.59	.49	.48
.32	.32	.32	.32	Nitrochlorobenzene, 1200 lb drs wks.....lb.	.23	.26	.26	23
2.85	2.75	2.75	2.75	Nitro-orthotoluidine, 300 lb bbls.....lb.	2.75	2.85	2.85	2.75
.55	.50	.50	.50	Nitrophenol 185 lb bbls....lb.	.50	.55	.55	.50
.94	.92	.92	.92	Nitrosodimethylaniline, 120 lb. bbls.....lb.	.92	.94	.94	.92
.30	.30	.30	.25	Nitrotoluene, 350 lb bbls....lb.	.....	.30	.30	.30
1.20	1.15	1.20	1.15	Phenylenediamine, 350 lb bbls .....lb.	1.15	1.20	1.20	1.15
.41	.40	.40	.40	Tolueneulfonamide, 175 lb bbls.....lb.	.70	.75	.75	.70
.22	.20	.20	.18	Toluenesulfonchloride, 410 lb bbls wks.....lb.	.20	.22	.22	.20
.42	.40	.45	.38	Toluidine, 350 lb bbls wk...lb.	.40	.42	.42	.40
.25	.20	.21	.21	Paris Green, Arsenic Basis 100 lb kegs.....lb.	.....	.27	.27	.25
.23	.17	.19	.19	250 lb kegs.....lb.	.....	.25	.25	.23
....	.....	.25	.25	Persian Berry Ext., bbls....lb.	.25	Nom.	.25	.25
.03	.02½	.02½	.02½	Petrolatum, Green, 300 lb bbl.lb.	.02	.02½	.02½	.02
.13	.20	.18	.16	Phenol, 250-100 lb drums.....lb.	.13	.14	.16	.13
1.35	1.3[illegible]	1.35	1.28	Phenyl - Alpha - Naphthylamine, 100 lb kegs.....lb.	.....	1.35	1.35	1.35

Phosphate

				Phosphate Acid (see Superphosphate)			
				Phosphate Rock, f.o.b. mines			
3.15	3.00	3.00	3.00	Florida Pebble, 68% basis..ton	3.00	3.15	3.15	3.00
3.65	3.50	3.50	3.50	70% basis.....ton	3.75	4.00	4.00	3.50
4.15	4.00	4.00	3.85	72% basis.....ton	4.25	4.50	4.50	4.00
5.00	5.00	5.35	5.00	75-74% basis.....ton	5.25	5.50	5.50	5.00
5.75	5.75	5.75	5.60	75% basis.....ton	.....	5.75	5.75	5.75
6.25	6.25	6.25	6.00	77-76% basis.....ton	.....	6.25	6.25	6.25
5.00	5.00	5.50	5.00	Tennessee, 72% basis.....ton	.....	5.00	5.00	5.00
.40	.35	.35	.35	Phosphorous Oxychloride 175 lb cyl.....lb.	.35	.40	.40	.35
.65	.60	.65	.60	Red, 110 lb cases.....lb.	.55	.60	.60	.55
.32	.32	.32	.32	Yellow, 110 lb cases wks..lb.	.....	.32	.32	.32
.46	.46	.46	.46	Sesquisulfide, 100 lb cs.....lb.	.....	.44	.46	.44
.....	.....	.35	.35	Trichloride, cylinders.....lb.	.. ..	.35	.35	.35
.20	.18	.18	.18	Phthalic Anhydride, 100 lb bbls wks.....lb.	.18	.20	.20	.18
45.00	37.00	40 00	37.00	Pigments Metallic, Red or brown bags, bbls, Pa. wks.....ton	37.00	45.00	45.00	37.00
.64	.63	.63	.63	Pine Oil, 55 gal drums or bbls Destructive dist.....lb.	.63	.64	.64	.63
10.60	8.00	8.00	8.00	Prime bbls.....bbl.	8.00	10.60	10.60	8.00
.70	.70	.70	.66	Steam dist. bbls.....gal.	.65	.70	.70	.65
45.00	40.00	40.00	40.00	Pitch Hardwood,..... wks.....ton	40.00	45.00	45.00	40.00
3.30	3.30	3.30	3.30	Plaster Paris, tech, 250 lb bbls .....bbl.	3.30	3.50	3.50	3.30

Potash

.07½	.07½	.07½	.07½	Potash, Caustic, wks.....lb.	.....	.07½	.07½	.07½
.07½	.07½	.07½	.07½	Imported casks c-1.....lb.	.....	.07½	.07½	.07½
				Potash Salts, Rough Kainit			
9.00	9.00	9.00	9.00	12.4% basis bulk.....ton	.....	9.10	9.10	9.00
9.50	9.50	9.50	9.50	14% basis.....ton	.....	9.60	9.60	9.50
				Manure Salts.....			
12.40	12.40	12.40	12.40	20% basis bulk.....ton	.....	12.50	12.50	12.40
18.75	18.75	18.75	18.75	30% basis bulk.....ton	.....	18.95	18.95	18.75
36.40	36.40	36.40	36.40	Potassium Muriate, 80% basis bags.....ton	.....	36.75	36.75	36.40
27.00	27.00	27.00	27.00	Pot. & Mag. Sulfate, 48% basis bags.....ton	.....	27.50	27.50	27.00
47.30	47.30	47.30	47.30	Potassium Sulfate, 90% basis bags.....ton	.....	47.75	47.75	47.30
.09½	.09	.09	.09	Potassium Bicarbonate, USP, 320 lb bbls.....lb.	.1[illegible]	.14	.14	.13
.09½	.08½	.08½	.08	Bichromate Crystals, 725 lb casks.....lb.	.09	.09½	.09½	.09
.12½	.12	.12	.11	Powd., 725 lb cks wks....lb.	.13	.13½	.13½	.13

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - July 1929 $1.017

sumption during the last five years in thousands of tons of pure nitrogen:—

	1924-25	*1925-26*
Synthetic Nitrogen Products	450	585
By-Product Sulfate of Ammonia	275	300
Chilean Nitrate	363	323
	1,088	1,208

	1926-27	*1927-28*
Synthetic Nitrogen Products	735	825
By-Product Sulfate of Ammonia	310	390
Chilean Nitrate	363	390
	1,316	1,605

	1928-29
Synthetic Nitrogen Products	1,075
By-Product Sulfate of Ammonia	405
Chilean Nitrate	415
	1,895

The comparative prices per unit of Nitrogen at which the most important nitrogenous products have been marketed during the last two years are approximately as follows:—Sulfate of Ammonia 90c; Synthetic Nitrate of Lime $1.13; Synthetic Nitrate of Soda $1.23; Chilean Nitrate of Soda $1.29; and notwithstanding the higher price asked for chilean nitrate, consumption has increased during the last two years of about 53 per cent., the increase in the consumption of synthetic nitrogen and by-product sulfate of ammonia during the same period having been about 42½ per cent.

The production of synthetic nitrogen during the past year is estimated at 1,125,000 tons, as compared with our estimate a year ago of 1,100,000 tons, and stocks at date are approximately 50,000 tons in excess of this date last year. The possible production during the coming year, from a careful analysis of all factories now in being, might reach 1,430,000 tons, and adding to this the probable production of by-product sulfate of ammonia at 425,000 tons, and chilean nitrate at 510,000 tons, the total world supplies might reach 2,365,000 tons of nitrogen, or about 25 per cent in excess of the past year's consumption. The announcement, however, by the "big three" of a reduction in prices for the coming year averaging about five per cent is calculated to have the effect of checking the output of some of the newer synthetic nitrogen producers, as the margin of profit to many of them at the reduced prices is negligible, and in some cases must represent a substantial loss, so that the total supplies will probably be less than at present estimated.

Sodium Phosphate — Continues to experience heavy demand with the result that imported material has been coming in in considerable quantity.

Sodium Tungstate — Scarcity of the metal has lead to a resulting scarcity in

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
.17	.16	.16	.16	Binoxiate, 300 lb bbls....lb.	16	.17	.17	.16
.30	.30	.30	.30	Bisulfate, 100 lb kegs....lb.	.....	.30	.30	.30
.05½	.05½	.05½	.05½	Carbonate, 80-85% calc. 800 lb casks....lb.	05½	.05½	.05½	.05½
.09	.06½	.08½	.08½	Chlorate crystals, powder 112 lb keg wks....lb.	.08½	.09	.09	.08½
.08½	.07½	.08½	.08½	Imported 112 lb kegs NY....lb.	07½	.07½	.07½	.07½
.05½	.05½	.05½	.05½	Chloride, crys bbls....lb.	.05½	.05½	.05½	.05½
.28	.27	.27	.27	Chromate, kegs....lb.	.27	.28	.28	.27
.57½	.55	.55	.55	Cyanide, 110 lb. cases....lb.	.55	.57½	.57½	.55
.12	.11½	.11½	.11½	Metabisulfite, 300 lb. bbl...lb.	.12	.13	.13	.11½
.17	.16	.16	.16	Oxalate, bbls....lb.	.20	.24	.24	.16
.12	.11	.11	.11	Perchlorate, casks wks....lb.	.11	.12	.12	.11
.15½	.15	.15½	.14½	Permanganate, USP, crys 500 & 100 lb drs wks....lb.	.16	.16½	.16½	.16
.38	.37	.39	.37½	Prussiate, red, 112 lb keg...lb.	.38	.40	.40	.38
.18½	.18	.18	.18	Yellow, 500 lb casks....lb.	.18½	.21	.21	.18½
.51	.51	.51	.51	Tartrate Neut, 100 lb keg..lb.	....	.21	.51	.51
.25	.25	.25	.25	Titanium Oxalate, 200 lb bbls ....lb.	.21	.23	.25	.21
.....	.....	.....	.....	Propyl Furoate, 1 lb tins....lb.	.....	5.00	5.00	5.00
.05	.04	.04	.04	Pumice Stone, lump bags....lb.	.04	.05	.05	.04
.06	.04½	.04½	.04½	250 lb bbls....lb.	.04½	.06	.06	.04½
.03	.02½	.02½	.02½	Powdered, 350 lb bags....lb.	.02½	.03	.03	.02½
.03½	.03½	3.75	3.75	Putty, commercial, tubs..100 lb.	.....	.03½	.03½	.03½
.07	.05½	5.50	5.50	Linseed Oil, kegs....100 lb.	.....	.05½	.05½	.05½
1.50	1.50	3.00	1.50	Pyridine, 50 gal drums....gal.	.....	1.75	1.75	1.50
.13	.13	.13	.12	Pyrites, Spanish cif Atlantic ports bulk....unit	.13	.13½	.13½	.13
.04	.03	.03	.03	Quebracho, 35% liquid tks....lb.	.03½	.04	.04	.03½
.04	.03½	.03½	.03½	450 lb bbls c-1....lb.	.03½	.04½	.04½	.03½
.05	.04	.04	.04	35% Bleaching, 450 lb bbl .lb.	.04½	.05½	.04½	.05½
.05	.05	.05	.04½	Solid, 63%, 100 lb bales cif..lb.	.05½	.05½	.05½	.05½
.05	.05	.05	.05	Clarified, 64%, bales....lb.	.....	.05½	.05½	.05½
.06	.05½	.06½	.06½	Quercitron, 51 deg liquid 450 lb bbls....lb.	.05½	.06	.06	.05½
.13	.10	.10	.10	Solid, 100 lb boxes....lb.	.10	.13	.13	.10
14.00	14.00	14.00	14.00	Bark, Rough....ton	.....	14.00	14.00	14.00
35.00	34.00	34.00	34.00	Ground....ton	34.00	35.00	35.00	34.00
.46	.45	.45	.45	R Salt, 250 lb bbls wks....lb.	.45	.46	.46	.45
.....	.....	.18	.18	Red Sanders Wood, grd bbls..lb.	.....	.18	.18	.18
1.35	1.25	1.25	1.25	Resorcinol Tech, cans....lb.	1.15	1.25	1.25	1.15
.57	.57	.67	.57	Rosin Oil, 50 gal bbls, first run ....gal.	.....	.62	.62	.57
.62	.62	.72	.62	Second run....gal.	.....	.64	.64	.62

Rosin

				Rosins 600 lb bbls 280 lb...unit			
9.75	8.20	13.00	8 50	B....	.....	8 55	8.55	7.45
9.80	8.25	13.00	8.50	D....	.....	8.55	8.65	7.70
9.95	8.60	13.15	8.50	E....	.....	8.67½	9.10	8.30
10.10	8.65	13.20	8.50	F....	.....	8.72½	9.30	8.40
10.10	8.75	13.25	8.50	G....	.....	8.75	9.45	8.40
10.10	8.75	13.30	8.50	H....	.....	8.75	9.50	8 40
10.15	8.80	13.35	8.55	I....	.....	8.75	9.50	8.40
10.15	8.85	14.80	8 65	K....	.....	8.82½	9.55	8.45
10.30	8.85	15.00	8.80	M....	.....	8.85	9.85	8.50
11.00	9.15	15.85	9.15	N....	.....	9.00	10.30	8.90
11.65	10.15	16.60	10.50	WG....	.....	9.20	11.30	9.15
12.65	10.40	18.55	12.00	WW....	.....	9.65	12.30	9.70
30.00	24.00	24.00	24.00	Rotten Stone, bags mines....ton	24.00	30.00	30.00	24.00
.08	.07	.07	.07	Lump, imported, bbls....lb.	.07	.08	.08	.07
.12	.09	.09	.09	Selected bbls....lb.	.09	.12	.12	.09
.05	.02	.02	.02	Powdered, bbls....lb.	.02	.05	.05	.02
.05	.04½	.04½	.04½	Sago Flour, 150 lb bags....lb.	.04½	.05	.05	.04½
.....	.....	.90	.90	Sal Soda, bbls wks....100 lb.	.....	1.00	1.00	1.00
20.00	19.00	19.00	19.00	Salt Cake, 94-96% c-1 wks. .ton	19.00	20.00	20.00	19.00
17.00	15.00	15.00	15.00	Chrome....ton	12.00	15.00	17.00	12.00
.06½	.06½	.06½	.06½	Saltpetre, double refd granular 450-500 lb bbls....lb.	.06½	.06½	.06½	.06½
.01½	.01½	.01½	.01½	Satin, White, 500 lb bbls....lb	.....	.01½	.01½	.01½
.62½	.49	.66	.47	Shellac Bone dry bbl....lb.	.....	.56	.61	.55
.55	.45	.57	.41	Garnet, bags....lb.	.. ..	.45	.45	.43
.58	.47	.65	40	Superfine, bags....lb.	.46	.47	.47	.45
.55	.42	.37	.57	T. N. bags....lb.	.....	.44	.44	.41
.57	.53	.50	.50	Schaeffer's Salt, kegs....lb.	.53	.57	.57	.53
11.00	8.00	6.00	6.00	Silica, Crude, bulk mines....ton	8.00	11.00	11.00	8.00
30.00	22.00	15.00	15.00	Refined, floated bags....ton	22.00	30.00	30.00	22.00
.....	.....	32.00	32.00	Air floated bags....ton	.....	32.00	32.00	32.00
40.00	32.00	55.00	55.00	Extra floated bags....ton	32.00	40.00	40.00	32.00
22.00	15.00	15.00	15.00	Soapstone, Powdered, bags f. o. b. mines....ton	15.00	22.00	22.00	15.00

Soda

				Soda Ash, 58% dense, bags c-1 wks....100 lb.	.....			
1.40	1.40	1.32½	1.32½	58% light, bags....100 lb.	.....	1.40	1.40	1.40
2.29	2.40	2.14	2.04	Contract, bags c-1 wks.100 lb.	.....	1.34½	1.34½	1.34½
1.32½	1.32½	1.32½	1.32½	Soda Caustic, 76% grnd & flake drums....100 lb.	.....	1.32	1.32	1.32
4.21	4.16	4.16	4.06	76% solid drs....100 lb.	.....	3.35	3.35	3.35
3.91	3.76	3.76	3.66	Contract, c-1 wks....100 lb.	.....	2.95	2.95	2.95
3.00	3.00	3.00	3.00	Sodium Acetate, crystals, 450 lb. bbls wks....lb.	.....	2.90	2.90	2.90
.05	.04½	.04½	.04½	Arsenate, drums....lb.	.06½	.06¾	.06¾	.05
.....	.....	.19	.18	Arsenite, drums....gal.	.18	.19	.19	.18
.....	.....	1.00	1.00	Bicarb, 400 lb bbl NY..100 lb.	1.00	1.50	1.50	1.00
2.41	2.41	2.41	2.41		.....	2.41	2.41	2.41

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this material and although some cessation in demand was noticeable, it seems quite possible that difficulty in meeting it will still prevail.

Tin Salts — Chief interest has centered about the metal market which has been advancing during the past month. The proposed stabilization of the tin industry is apparently making considerable progress and it seems quite possible that practically all of the output will be under some form of centralized control or agreement.

Turpentine — Has held fairly firm and with but slight price changes during the past month. The change, however, was upwards for the first time in several months and the increased activity is taken to indicate the coming of improved conditions in this market. Spirit is now at 52c @ 58c gal. and wood distilled at 50c gal.

OILS AND FATS

Chinawood Oil — Has been prevailingly firm during the past month due to unsettled conditions in the primary market. As a result, also, prices have advanced somewhat so that tanks are quoted at 13½c lb. at the Coast and 13⅞c lb. on spot. Exports of Chinese tung oil to the United States from Hankow during June totalled 16,472,000 pounds, exceeding the May figure by more than 6,500,000 pounds, according to the Department of Commerce. The month's exports to this country were also well ahead of shipments in June, 1928, which totaled 10,234,070 pounds. Shipments to Europe during June amounted to 1,411,200 pounds, against 1,211,840 pounds in May and 5,870,480 pounds in June a year ago. Stocks at Hankow June 30 were estimated at 3,500 short tons, of which 1,000 tons were unsuitable for export, against 2,400 tons at the end of May and 2,000 tons on June 30, 1928. Shipments to the United States during the first half of 1929 totaled 54,237,465 pounds against 46,711,665 pounds in the corresponding period last year. Tung oil imported in May reached 9,475,302 pounds, an increase of 1,287,618 pounds over the same month the previous year.

Coconut Oil — Has been in somewhat better position during the past month and as a result prices have advanced somewhat

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
.07	.06¼	.06½	.06½	Bichromate, 500 lb cks wks..lb.	.07½	.07¼	.07¼	.07½
.04	.04	.08½	.08½	Bisulfite, 500 lb bbl wks....lb.	.....	.04	.04	.04
1.35	1.30	1.30	1.30	Carb. 350 lb bbls NY..100 lb.	1.30	1.35	1.35	1.30
.06¾	.05¾	.06½	.06½	Chlorate, ... wks..lb.	.10	.11	.11	.06½
13.00	12.00	12.00	12.00	Chloride, technical.....ton	12.00	13.00	13.00	12.00
.20	.20	.20	.20	Cyanide, 96-98%, 100 & 250 lb drums wks.....lb.	.18	.20	.20	.18
.09	.08¾	.08¾	.08¾	Fluoride, 300 lb bbls wks...lb.	.08¾	.09	.09	.08¾
.24	.22	.22	.22	Hydrosulfite, 200 lb bbls f. o. b. wks.....lb.	.22	.24	.24	.22
.05	.05	.05	.05	Hypochloride solution, 100 lb cbys.....lb.	.....	.05	.05	.05
3.05	2.65	2.65	2.65	Hyposulfite, tech, pea cyrs 375 lb bbls wks.....100 lb.	2.65	3.05	3.05	2.65
2.65	2.40	2.40	2.40	Technical, regular crystals 375 lb bbls wks....100 lb.	2.40	2.65	2.65	2.40
.45	.45	.70	.45	Metanilate, 150 lb bbls.... lb.	.....	.45	.45	.45
.....	.....	.02½	.02½	Monohydrate, bbls.....lb.	.....	.02½	.02½	.02½
.57	.55	.55	.55	Naphthionate, 300 lb bbl...lb.	.55	.57	.57	.55
2.45	2.12½	2.67	2.25	Nitrate, 92%, crude, 200 lb bags c-l NY.....100 lb.	.....	2.07	2.22½	2.07
.08¼	.07½	.08¼	.08	Nitrite, 500 lb bbls spot....lb.	.07½	.08	.08	.07½
.27	.25	.25	.25	Orthochlorotoluene, sulfonate, 175 lb bbls wks.....lb.	.25	.27	.27	.25
.23	.20	.20	.20	Oxalate Neut, 100 lb kegs..lb.	.37	.42	.42	.37
3.90	3.90	3.90	3.90	Paratoluene, tri-sodium, tech. 100 lb bbls c-1....100 lb.	.....	3.90	3.90	3.90
.09	.08	.08	.08	Sulfonate, 175 lb bbls....lb.	.08	.09	.09	.08
.22	.21	.21	.21	Perborate, 275 lb bbls.....lb.	.18	.20	.22	.18
3.55	3.25	3.25	3.25	Phosphate, di-sodium, tech. 310 lb bbls.....100 lb.	3.25	3.55	3.55	3.25
.....	.....	.....	.....	tri-sodium, tech, 325 lb bbls.....100 lb.	3.90	4.00	4.00	3.90
.72	.69	.69	.69	Picramate, 100 lb kegs.....lb.	.69	.72	.72	.69
.12½	.12	.12	.11	Prussiate, Yellow, 350 lb bbl wks.....lb.	.12	.12½	.12½	.12
.14	.13½	.13½	.13½	Pyrophosphate, 100 lb keg..lb.	.15	.20	.20	.15
1.45	1.20	1.20	1.20	Silicate, 60 deg 55 gal drs, wks .....100 lb.	.....	1.65	1.65	1.65
1.10	.85	.85	.85	40 deg 55 gal drs, wks .....100 lb.	.70	.80	.80	.70
.05	.05	.04½	.04½	Silicofluoride, 450 lb bbls NY .....lb.	.05½	.05½	.05½	.05
.49	.48½	.48½	.48½	Stannate, 100 lb drums....lb.	.41½	.42	.43	.41½
.29	.18	.20	.20	Stearate, bbls.....lb.	.25	.29	.29	.25
.18	.16	.16	.16	Sulfanilate, 400 lb bbls.....lb.	.16	.18	.18	.16
.02¾	.02½	.02¼	.02¼	Sulfate Anhyd, 550 lb bbls c-1 wks.....lb.	.02½	.02¼	.02¼	.02½
.02¾	.02½	.02½	.02½	Sulfide, 30% crystals, 440 lb bbls wks.....lb.	.02½	.02¼	.02¼	.02½
.04	.03½	.03½	03½	62% solid, 650 lb drums 1c-1 wks.....lb	.03½	.04	.04	.03½
.03½	.03½	.03½	.03¼	Sulfite, crystals, 400 lb bbls wks.....lb.	.03½	.03½	.03½	.03½
.50	.40	.40	.40	Sulfocyanide, bbls.....lb.	.30	.40	.76	.30
.85	.80	.85	.80	Tungstate, tech, crystals, kegs .....lb.	.....	1.40	1.40	1.40
.40	.35	.40	.35	Solvent Naphtha, 110 gal drs wks.....gal.	.35	.40	.40	.35
.01¾	.01¾	.01¾	.01¾	Spruce, 25% liquid, bbls.....lb.	.....	.01¾	.01¾	.01¾
.01	.01	.01	.01	25% liquid, tanks wks.....lb.	.....	.01	.01	.01
.02¼	.02	.02	.02	50% powd, 100 lb bag wks lb.	.02	.02¼	.02¼	.02
4.42	3.07	3.22	3.07	Starch, powd., 140 lb bags .....100 lb.	3.82	4.02	4.02	3.82
4.32	2.97	3.12	2.97	Pearl, 140 lb bags.....100 lb.	3.72	3.92	3.92	3.72
.06¾	.05¾	.06	.04¾	Potato, 200 lb bags.....lb.	.05¼	.06¼	.06¼	.05¾
.06¾	.05¾	.06¼	.06¼	Imported bags.....lb.	.05¼	.06¼	.06¼	.05¾
.08¼	.08	.08	.06	Soluble.....lb.	.08	.08¼	.08¼	08
.10	.09¼	.09¼	.09	Rice, 200 lb bbls.....lb.	.09¼	.10	.10	.09¼
.07	.06¼	.06½	.06½	Wheat, thick bags.....lb.	.06½	.07	.07	.06¼
.10	.09¼	.09½	.09½	Thin bags.....lb.	.09½	.10	.10	.09½
.07½	.07¼	.07¼	.07¼	Strontium carbonate, 600 lb bbls wks.....lb.	.07½	.07¼	.07¼	.07¼
.09	.08¼	.08¼	.08	Nitrate, 600 lb bbls NY....lb.	.09	.09¼	.09¼	.08¼
.....	.....	.....	.....	Peroxide, 100 lb drs.....lb.	.....	1.25	1.25	1.25

Sulfur

2.05	2.05	2.05	2.05	Sulfur Brimstone, broken rock, 250 lb bag c-1.....100 lb.	.....	2.05	2.05	2.05
19.00	18.00	18.00	18.00	Crude, f. o. b. mines.....ton	18.00	19.00	19.00	18.00
2.40	2.40	2.40	2.40	Flour for dusting 99½%, 100 lb bags c-1 NY....100 lb.	.....	2.40	2.40	2.40
2.50	2.50	2.50	2.50	Heavy bags c-1.....100 lb.	.....	2.50	2.50	2.50
3.45	3.45	3.45	3.45	Flowers, 100%, 155 lb bbls c-1 NY.....100 lb.	.....	3.45	3.45	3.45
2.85	2.65	2.65	2.65	Roll, bbls 1c-1 NY.....100 lb.	2.65	2.85	2.85	2.65
.05½	.05	.05	.05	Sulfur Chloride, red, 700 lb drs wks.....lb.	.05	.05½	.05½	.05
.04½	.03½	.03¾	.03¼	Yellow, 700 lb drs wks.....lb.	.03½	.04½	.04½	.03½
.08½	.08	.08	.08	Sulfur Dioxide, 150 lb cyl....lb.	.08	.08½	.08½	.08
.19	.17	.17	.17	Extra, dry, 100 lb cyl.....lb.	.17	.19	.19	.17
.65	.10	.65	.65	Sulfuryl Chloride, 600 lb dr...lb.	.10	.65	.65	.10
.11½	.11	.11	.11	Stainless, 600 lb bbls....lb.	.11	.11½	.11½	.11
.06	.05½	.05	.05	Extract, 450 lb bbls.....lb.	.05½	.06	.06	.05½
130.00	130.00	130.00	130.00	Sicily Leaves, 100 lb bg...ton	.....	130.00	130.00	130.00
72.00	72.00	80.00	72.00	Ground shipment.....ton	.....	72.00	72.00	72.00
60.00	55.00	55.00	55.00	Virginia, 150 lb bags.....ton	55.00	60.00	60.00	55.00
15.00	12.00	12.00	12.00	Talc, Crude, 100 lb bgs NY...ton	12.00	15.00	15.00	12.00
18.00	16.00	16.00	16.00	Refined, 100 lb bgs NY..ton	16.00	18.00	18.00	16.00
35.00	30.00	30.00	30.00	French, 220 lb bags NY...ton	20.00	25.00	25.00	20.00
45.00	38.00	38.00	38.00	Refined, white, bags....ton	38.00	45.00	45.00	38.00
50.00	40.00	40.00	40.00	Italian, 220 lb bags NY...ton	40.00	50.00	50.00	40.00
55.00	50.00	50.00	50.00	Refined, white, bags....ton	50.00	55.00	55.00	50.00
				Superphosphate, 16% bulk, wks.....ton	.....	9.00	10.00	9.00

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - July 1929 $1.017

for the first time in several months. Manila is now at 7¼c lb. in tanks at the Coast and 7½c lb. in tanks New York. Ceylon is at 7¾c lb. and Cochin at 8½c lb. in tanks at New York.

Corn Oil — Following the higher tendency in the cottonseed oil market and the stronger position of the grain market, quotations on crude oil have advanced somewhat during the past month and are now at 8c lb. in tanks.

Cottonseed Oil — Has been very firm during the past month and prices have advanced about three points since last quoted. A review of this country's foreign trade in oils and fats shows that the feature of our export trade is cottonseed oil, amounting in 1928 to 51,702,246 pounds of crude and refined, valued at $4,656,725—crude representing 41,126,452 pounds and $3,455,567. This figure for crude was surpassed in 1927, but exports for 1928 were well above those for 1924, 1925, and 1926. Canada has been our best customer throughout the past five years, taking 39,084,870 pounds last year, the largest amount in the past five years with the exception of 1927. Mexico, with 2,036,159 pounds, ranked second in 1928. Remaining exports are of no commercial importance. Last year refined oil exports reached the lowest figure in the past five years. The curve has been steadily downwards, the gradual substitution in the consuming countries of the world of other vegetable oils and retention of greater quantities for consumption of refined cottonseed oil at home. The Crop Reporting Board of the United States Department of Agriculture estimates the acreage of cotton in cultivation on July 1 to be 48,457,000 acres, an increase of 3.2 per cent above the acreage on July 1, 1928, when 46,946,000 acres were estimated to have been in cultivation. This year's acreage is six tenths of one per cent less than the record acreage of 48,730,000 acres planted in 1926.

Linseed Oil — A record of some description has been set during the past month in this commodity which has advanced 2c lb. in price since last quoted. This places the tank price at 11.7c lb., the barrel price at 12.5c lb., and five-barrel lots at 12.9c lb., which exceeds the high of the two previous years.

Business is not proceeding in very heavy volume, but the market is firm at these figures chiefly because of the unfavorable crop reports. According to reports, there is much talk of half a crop of flaxseed in the northwest states on 3,000,000 acres.

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
5.10&10	4.65&10	4.85	4.00	Tankage Ground NY.....unit	..... 4.00&10	4.75&10	4.00&10
4.80&10	3.90&10	5.25	3.75	High grade f.o.b. Chicago.unit	..... 3.75&10	4.80&10	3.75&10
5.00&10	4.60&10	5.25	4.00	South American cif.....unit	..... 4.35&10	4.80&10	4.35&10
.05	.04½	.04½	.04½	Tapioca Flour, high grade bgs.lb.	.04½ .05	.05	.04½
.04	.03½	.03½	.03½	Medium grade, bags.....lb.	.03½ .04	.04	.03½
.27	.26	.26	.26	Tar Acid Oil, 15%,drums....gal.	.26 .27	.27	.26
.30	.29	.29	.29	25% drums.....gal.	.29 .30	.30	.29
.08	.07	.07	.07	Coke Oven, tanks wks.....lb.	.07 .08	.08	.07
13.50	13.50	16.00	13.50	Kiln Burnt, bbl.....bbl.	..... 13.50	13.50	13.50
15.00	13.50	18.50	13.50	Retort, bbls.....bbl.	13.50 15.00	15.00	13.50
				Terra Alba Amer. No. 1, bgs or			
1.75	1.15	1.15	1.15	bbls mills.....100 lb.	1.15 1.75	1.75	1.15
2.00	1.50	1.50	1.50	No. 2 bags or bbls...100 lb.	1.50 2.00	2.00	1.50
.02½	.02	2.00	2.00	Imported bags.....100 lb.	.02 .02½	.02½	.02
.....	.....	.....	.....	Tetrachlorethane, 50 gal dr...lb.	.09 .09½	.09½	.09
.20	.20	.20	.20	Tetralene, 50 gal drs wks.....lb.	..... .20	.20	.20
.24	.22	.22	.22	Thiocarbanilid, 170 lb bbl....lb.	.22 .24	.24	.22
				Tin Bichloride, 50% soln, 100 lb			
.17½	.14½	.20½	.17½	bbls wks.....lb.	..... .14½	.14½	.14
.41½	.36½	.48	.41½	Crystals, 500 lb bbls wks...lb.	.35½ .38	.38	.34½
.58	.48	.71½	.58	Metal Straits NY.....lb.	..... .46½	.48	.43½
.75	53	.75	.70	Oxide, 300 lb bbls wks.....lb.	..... .49	.56	.49
				Tetrachloride, 100 lb drs wks.			
.35½	.30½	.48	.35½	.....lb.	..... .29½	.30½	.28½
.40	.40	.40	.40	Titanium Oxide300 lb bbl....lb.	..... .24	.40	.24
.14	.13½	.13½	.13½	Pigment, bbls.....lb.	.08½ .09	.14	.08½
.45	.40	.40	.40	Toluene, 110 gal drs.....gal.	..... .45	.45	.45
.45	.35	.35	.35	8000 gal tank cars wks....gal.	..... .40	.40	.40
.94	.90	.90	.90	Toluidine, 350 lb bbls.....lb.	.90 .94	.94	.90
.32	.31	.31	.31	Mixed, 900 lb drs wks.....lb.	.31 .32	.32	.31
.90	.85	.85	.85	Toner Lithol, red, bbls.....lb.	.90 .95	.95	.85
.80	.70	.75	.75	Para, red, bbls.....lb.	..... .80	.80	.70
1.80	1.70	1.75	1.75	Toluidine .....lb.	1.50 1.55	1.55	1.50
3.90	3.60	3.60	3.60	Triacetin, 50 gal drs wks.....lb.	3.60 3.90	3.90	3.60
.....	.....	.....	.....	Trichlorethylene, 50 gal dr...lb.	.10 .10½		
.....	.....	.....	.....	Triethanolamine, 50 gal drs...lb.	.55 .60	.60	.55
.50	.36	.36	.36	Tricresyl Phosphate, drs.....lb.	.33 .45	.45	.33
.73	.69	.70	.69	Triphenylguanidine.....lb.	.58 .60	.70	.58
.75	.70	.70	.70	Phosphate, drums.....lb.	.70 75	.75	.70
3.00	2.50	2.50	2.50	Tripoli, 500 lb bbls.....100 lb.	1.75 2.00	2.00	1.75
.66½	.50½	.86	.53½	Turpentine Spirits, bbls.....gal.	.52 .58	.65	.51¼
.59	.46	.76	.46	Wood Steam dist. bbls....gal.	..... .50	.57	.49
.20	.18	.18	.18	Urea, pure, 112 lb cases.....lb.	.20 .30	.30	.20
				Fert. grade, bags c.i.f.....ton	..... 99.00	99.00	98.00
				c. i. f. S. points.....ton	..... 100.30	100.30	99.30
				Valonia Beard, 42%, tannin			
76.00	55.00	70.00	66.00	bags.....ton	..... 46.00	55.00	46.00
55.00	58.00	49.50	39.00	Cups, 30-31% tannin.....ton	..... 32.00	35.00	31.00
64.00	45.00	68.00	43.00	Mixture, bark, bags.....ton	..... 37.00	43.00	37.00
2.10	1.75	1.95	1.55	Vermillion, English, kegs....lb..	2.00 2.05	2.05	2.00
.....	.....	.....	.....	Vinyl Chloride, 16 lb cyl.....lb.	..... 1.00	1.00	1.00
76.00	49.75	59.00	49.50	Wattle Bark, bags.....ton	48.25 48.50	49.75	43.50
				Extract 55%, double bags ex-			
.06½	.05½	.05½	.05½	dock.....lb.	..... .06½	.06½	.06½
				Whiting, 200 lb bags, c-1 wks			
1.25	1.25	1.25	1.25	.....100 lb.	..... 1.25	1.25	1.25
13.00	13.00	13.00	13.00	Alba, bags c-1 NY.....ton	..... 13.00	13.00	13.00
1.35	1.35	1.35	1.35	Gilders, bags c-1 NY...100 lb.	..... 1.35	1.35	1.35

Zinc

				Zinc Ammonium Chloride powd.,			
.05½	5.85	.06½	.06½	400 lb bbls.....100 lb.	5.25	5.75	5.75	5.25
.10	.09½	.09½	.09½	Carbonate Tech, bbls NY..lb.	.10½	.11	.11	.10½
				Chloride Fused, 600 lb drs.				
.06	.06	.06	.06	wks.....lb.	.05½	.06	.06	.05½
.06½	.06½	.06½	.06½	Gran., 500 lb bbls wks.....lb.	.06½	.06½	.06½	.06½
3.00	3.00	3.00	3.00	Soln 50%, tanks wks...100 lb.	.....	3.00	3.00	3.00
.41	.40	.40	.40	Cyanide, 100 lb drums.....lb.	.40	.41	.41	.40
				Dithiofuroate, 100 lb dr....lb.	.....	1.00	1.00	1.00
.09	.09	.09	.09	Dust, 500 lb bbls c-1 wks...lb.	.08½	08½	.08½	.08½
				Metal, high grade slabs c-1				
6.40	6.07½	7.35	6.40	NY.....100 lb.	.....	6 45	6.45	6.45½
.07½	.07½	.07½	.07½	Oxide, American bags wks..lb.	.07½	.07½	.07½	.07
.12½	.10½	.10½	.10½	French, 300 lb bbls wks...lb.	.09½	.11½	.11½	.09½
.....	.....	.....	.....	Perborate, 100 lb drs.....lb.	.....	1.25	1.25	1.25
.....	.....	.....	.....	Peroxide, 100 lb drs.....lb.	.....	1.25	1.25	1.25
.....	.....	.....	.....	Stearate, 50 lb bbls.....lb.	.25	.26	.26	.25
.03½	.03½	.03½	.03	Sulfate, 400 bbl wks.....lb.	.03½	.03½	.03½	.03½
.32	.30	.30	.30	Sulfide, 500 lb bbls.....lb.	.30	.32	.32	.30
.30	.29	.29	.29	Sulfocarbolate, 100 lb keg..lb.	.29	.30	.30	.29
.32	.32	.38	.32	Xylene, 10 deg tanks wks...gal.	.....	.33	.33	.33
.32	.30	.36	.30	Commercial, tanks wks...gal.	.30	.32	.32	.30
.38	.38	.35	.35	Xylidine, crude.....lb.	.....	.38	.38	.38
.03	.02½	.02½	.02½	Zirconium Oxide, Nat. kegs...lb.	.02½	.03	.03	.02½
.50	.45	.45	.45	Pure kegs.....lb.	.45	.50	.50	.45
.10	.08	.08½	.08	Semi-refined kegs.....lb.	.08	.10	.10	.08

Oils and Fats

.14½	.13	.14	.13	Castor, No. 1, 400 lb bbls.....lb.	.13	.13½	.13½	.13
.14	.12½	.14	.12½	No. 3, 400 lb bbls.....lb.	.12½	.13	.13	.12½
.17	.14	.18	.17	Blown, 400 lb bbls.....lb.	.14	.15	.15	.14
.17	.14½	.31	.13½	China Wood, bbls spot NY...lb.	.14½	.15	.15½	.14½
.14½	.14½	.18	.12½	Tanks, spot NY.....lb.	....	.13½	.13½	.13½
.14½	.12½	.....	.....	Coast, tanks, Aug.....lb.	.....	.13½	.14½	.12½
.11½	.10½	.12	.12	Cocoanut, edible, bbls NY....lb.	.....	.10½	.10½	.10½
.10	.09½	.09½	.09	Ceylon, 375 lb bbls NY....lb.	.08½	.08½	.09½	.08
.09	.08½	.08½	.08	8000 gal tanks NY.....lb.	.....	.07½	.08½	.07½
.10½	.09½	.10½	.09½	Cochin, 375 lb bbls NY....lb.	.08½	.09½	.10	.09½
.09½	.08½	.10	.08½	Tanks NY.....lb.	.....	.08½	.09½	.08½
.10	.08½	.09½	.08½	Manila, bbls NY.....lb.	.08½	.08½	.09½	.08
.08½	.08	.08½	.08½	Tanks NY.....lb.	.....	.07½	.08½	.07½
.08½	.07½	.08½	.08	Tanks, Pacific Coast.....lb.	.....	.07½	.08	.06½

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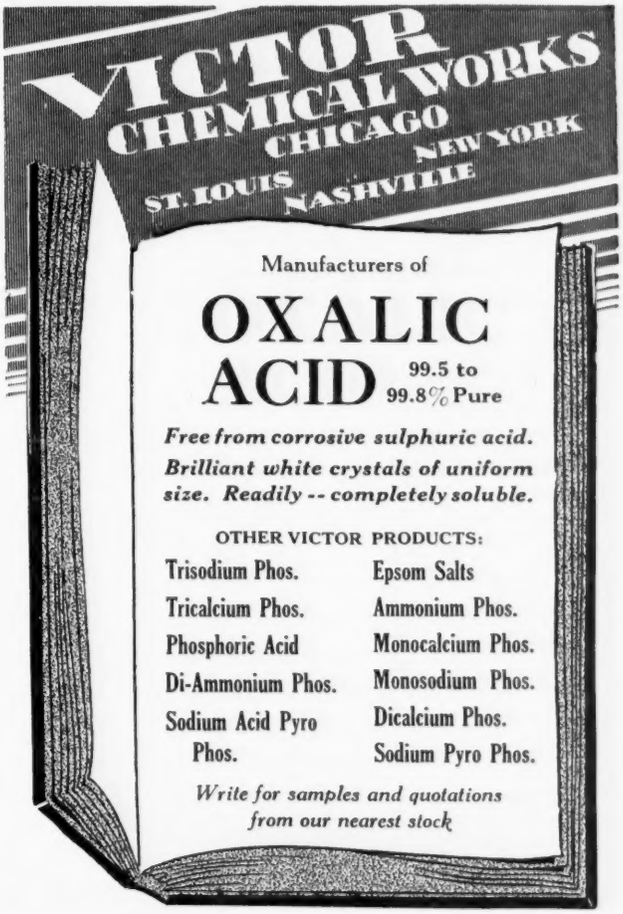

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1829 $1.047 - July 1929 $1.017

With a normal yield of nine bushels that would result in 14,000,000 to 16,000,000 bushels. The amount of heat and moisture may much improve or damage this situation; there are some very good reports from southern Minnesota, South Dakota and parts of Montana, but advices from northern Minnesota, North Dakota and Montana are generally poor.

Present estimates indicate that there will be no increased acreage of flax harvested over the 1928 acreage, and with good weather from now to harvest there may be as much flax as last year, but with no subsoil moisture and present estimate of one bushel per acre less, we should not at this time expect more seed than in 1928 crop. Much will depend on the Argentine crop, all of which is not yet planted. There will be 16c per bushel more duty to pay than a year ago, and possibly 23 or 30 cents more. The domestic flax plant has before it four weeks of the hottest and most trying weather. On the other hand, the Department of Agriculture estimates the domestic crop at 19,900,000 bushels as compared with last year's crop of 18,700,000 bushels. Acreage reported on July 1 was 3,092,000 acres, 117.2 per cent of the acreage harvested in 1928. However, the entire situation is colored by possible rainfall, and upon that factor will depend to a large extent the size of the crop in this country. Acreage sown in Canada is estimated at 369,000 acres, as compared to 378,000 in 1928. The condition of the Canadian crop on June 30 was 91 per cent of the 10-year average, as compared to 98 per cent on the corresponding date last year. Commercial stocks reported as of June 29 to United States and Canadian governments were 981,000 bushels, as compared to 2,571,000 at the corresponding time last year, and 3,550,000 bushels in 1927.

Soy Bean Oil — Has become quite limited in supply with the imported material unable to compete and no new crop of domestic oil available much before September. As a result, prices have advanced during the past month, and quotations are now at 8⅝c lb. in tanks at the mills.

Tallow — Considerable improvement has been noticeable in this market during the past month and the end of the month found prices firm and on the upgrade. Extra was quoted at 7¾c lb., an increase of ¾c lb. during the past month. The healthier condition is attributed to recent exports which have removed the surplus from the domestic market, thus removing the easy condition which had prevailed.

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
				Cod, Newfoundland, 50 gal bbls			
.69	.63	.66	.63	.....gal.	.63	.64	.63
.63	.60	.59	.59	Tanks NY.....lb.	.....	.60	.60	.60
				Cod Liver see Chemicals.....			
.06½	.05½	.06	.06	Copra, bags.....lb.	.....	.042	.05½	.042
.11	.10	.11	.07	Corn, crude, bbls NY.....lb.	.....	.09½	.10¾	.09½
.10	.08½	.09¾	.07	Tanks, mills.....lb.	.....	.08	.09¼	.07⅞
.12½	.11¼	.14	.10½	Refined, 375 lb bbls NY....lb.	.....	.10½	.11¼	.10½
.11½	.10¼	.12	.11	Tanks.....lb.	.....	.09	.11	.09
.09½	.07¾	.09½	.06½	Cottonseed, crude, mill.....lb.	.....	Nom.	.09	.08½
10.65	.09¼	.11¼	.08 1/5	PSY 100 lb bbls spot.....lb.	.....	.098	.1075	.095
10.75	.09½	.....	.....	Sept.—Nov.....lb.	.....	.097	.1080	.096
				Degras, American, 50 gal bbls			
.05	.04½	.04½	.04½	NY.....lb.	.04½	.05	.05	.04½
.05½	.04½	.04½	do	English, brown, bbls NY....lb.	.....	.05½	.05½	.05½
.05¼	.05¼	.05½	.05½	Light, bbls NY.....lb.	.....	.05¼	.05¼	.05¼
				Greases			
.08½	.07	.07½	.06	Greases, Brown.....lb.	.....	.06	.08½	.06
.08½	.07	.08	.06½	Yellow.....lb.	.....	.06½	.08½	.06½
.11	.09½	.10⅜	.08¾	White, choice bbls NY.....lb.	.....	.08⅜	.11¼	.07½
.42½	.40	.....	.....	Herring, Coast, Tanks.....gal.	.....	Nom.		
Nom.	.09½	.09½	.09	Horse, bbls.....lb.	.09½	Nom.	Nom.	.....
.16¼	.15½	.16⅜	.14⅞	Lard Oil, edible, prime.....lb.	.....	.15	.15⅜	.15
.13½	.12	.13⅜	.10⅜	Extra, bbls.....lb.	.....	.12½	.13½	.12½
.13	.11	.12½	.10½	Extra No. 1, bbls.....lb.	.....	.12	.13¼	.12
10.8	10.0	.11 4/5	.10 2/5	Linseed, Raw, five bbl lots...lb.	.....	.129	.129	.105
10.4	9.6	.11 9/10	.09 6/10	Bbls c-l spot.....lb.	.....	.125	.125	.101
9.6	8.8	.10½	.09	Tanks.....lb.	.....	.117	.117	.093
.09¾	.09¼	.09¾	.09¾	Lumbang, Coast.....lb.	.....	.09¼	.09¾	.09¼
.48	.40	.47½	.44	Menhaden Tanks, Baltimore.gal.	.....	.45	.52	.52
.09	.09	.90	.10	Blown, bbls NY.....lb.	.....	.09	.09	.09
.70	.67	.70	.67	Extra, bleached, bbls NY..gal.	.....	.70	.70	.70
.64	.63	.66	.63	Ligh, pressed, bbls NY....gal.	.63	.64	.64	.63
.67	.66	.66	.69	Yellow, pressed, bbls NY..gal.	.66	67	.67	.66
				Mineral Oil, white, 50 gal bbls			
.60	.40	.....	.....	.....gal.	.40	.60	.60	.40
1.00	.95	.....	.....	Russian, gal.....gal.	.95	1.00	1.00	.95
.19	.18½	.18⅜	.14½	Neatsfoot, CT, 20° bbls NY..lb.	.....	.18½	.19	.18⅜
.13½	.12	.13½	.10¼	Extra, bbls NY.....lb.	.....	.12½	.13½	.12½
.16¼	.15½	.16⅜	.12¼	Pure, bbls NY.....lb.	.....	.13½	.15¼	.13½
.17⅜	.11⅜	.18½	.10	Oleo, No. 1, bbls NY.....lb.	.....	.10⅜	.11½	.10⅜
.15½	.11	.17	.08¾	No. 2, bbls NY.....lb.	.....	.10½	.11½	.10½
.14	.10	.14	.08½	No. 3, bbls NY.....lb.	.....	.10	.10½	.10
1.40	1.18	1.75	1.40	Olive, denatured, bbls NY...gal.	1.15	1.25	1.40	1.25
2.00	1.75	2.00	2.45	Edible, bbls NY.....gal.	1.95	2.00	2.00	1.95
.11	.09⅜	.10½	.08¾	Foots, bbls NY.....lb.	.09½	.09½	.11½	.09½
.09½	.08½	.09½	.09	Palm, Kernel, Casks.....lb.	.....	.08½	.09	.08
.09½	.07¾	.08¾	.07½	Lagos, 1500 lb casks.....lb.	.....	.08	.09	.07½
.08⅜	.07	.08½	.07¼	Niger, Casks.....lb.	.....	.07½	.08¾	.07¼
.12½	.12	.14½	.12	Peanut, crude, bbls NY.....lb.	.....	Nom.	Nom.	.....
.17	.14½	.15½	.14½	Refined, bbls NY.....lb.	.14½	.15	.15	.14½
.21	.13	.16½	.12½	Perilla, bbls NY.....lb.	.....	.15½	.20	.15½
.15½	.10½	.14½	.10	Tanks, Coast.....lb.	.....	.13¼	.14½	.13¼
1.75	1.70	1.70	1.70	Poppyseed, bbls NY.....gal.	1.70	1.75	1.75	1.70
1.06	1.01	1.05	1.00	Rapeseed, blown, bbls NY...gal.	1.04	1.04	1.04	1.04
.92	.83	.90	.82	English, drms. NY.....gal.	.85	.90	.90	.85
.90	.81	.85	.76	Japanese, drms. NY.....gal.	.80	.84	.88	.80
.10⅜	.09¼	.10	.09	Red, Distilled, bbls.....lb.	.10⅜	.10⅞	.11⅜	.10⅜
.09½	.08	.09⅜	.08½	Tanks.....lb.	.....	.09½	.10½	.09½
.5-	.42	.50	.50	Salmon, Coast, 8000 gal tks..gal.	.42	.44	.44	.42
.50	.41	.47	.43	Sardine, Pacific Coast tks...gal.	.....	.45	.51	.45
.13½	.12	.13	.11½	Sesame, edible, yellow, dos...lb.	.11½	.12	.12	.11½
.15	.12½	.14	.14	White, dos.....lb.	.12¼	.12½	.12½	.12¼
.40	.40½	.40	.40	Sod, bbls NY.....gal..	.....	.40	.40	.40
.....	.....	.09½	.09½	Soy Bean, crude.....				
.09¼	.09	.....	.....	Pacific Coast, tanks.....lb.	.....	nom.	.10	.09
				Domestic tanks, f.o.b. mills, ...lb.	.....	.08½	.08½	.08½
.12½	.12	.12¼	.10¾	Crude, bbls NY.....lb.	.....	.11½	.12¼	.11½
.10⅜	.10¼	.11	.10½	Tanks NY.....lb.	.....	Nom.	.10½	.10¼
.13¼	.13¼	.13	.12	Refined, bbls NY.....lb.	.13¼	.13½	.13½	.13¼
				Sperm, 38° CT, bleached, bbls			
.85	.84	.85	.84	NY.....gal.	.84	.85	.85	.84
.80	.79	.82	.79	45° CT, bleached, bbls NY gal.	.79	.80	.80	.79
				Stearic Acid, double pressed dist			
.18½	.11	.13½	.11½	bags.....lb.	.15½	.15¾	.18½	.15½
				Double pressed saponified bags			
.19	.11½	.14	.11½	.....lb.	.15½	.16½	.19	.15¾
.20½	.13¼	.15¼	.13¼	Triple, pressed dist bags..lb	.17¼	.18¼	20½	.17¾
.12½	.09½	.13	.08¾	Stearine, Oleo, bbls.....lb.	.10	.10½	.12	.09¾
.09½	.08½	.09	.07½	Tallow City, extra loose.....lb.	.....	.07¾	.08⅜	.07
.10¾	.09¾	.11	.08½	Edible, tierces.....lb.	.....	.08½	.10½	.08
.12¾	.11½	.10⅜	.08½	Tallow Oil, Bbls, c-1 NY...lb.	.....	.10¾	.12	.10¾
.11½	.10½	.12½	.10	Acidless, tanks NY.....lb.	.....	.09¾	.11	.09¾
Nom.	.08	.08½	.07½	Vegetable, Coast mats.....lb.	.08	Nom.	Nom.	.08
.11	.....	.11	.11	Turkey Red, single bbls.....lb.	.11	.12	.12	.11
.16	.14	.14	.14	Double, bbls.....lb.	.14	.16	.16	.14
				Whale, bleached winter, bbls			
.80	.78	.78	.78	NY.....gal.	.78	.80	.80	.78
.82	.80	.80	.80	Extra, bleached, bbls NY..gal.	.80	.82	.82	.80
.78	.76	.76	.76	Nat. winter, bbls NY.....gal.	.76	.78	.78	.76

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"WE"—Editorially Speaking

To those who claim that professional courtesy is going or has gone the way of all other courtesy, we offer in rebuttal the article by Mr. Westman on "Mergers and Markets in Canada." As the editor of Canada's leading business publication in the chemical field our colleague is exceptionally qualified to give us an intimate panoramic view of the development of the industry in that country. He is a graduate of the University of Toronto and has edited "Canadian Chemistry and Metallurgy" since 1918. For the past seven years he has also held the office of general secretary of the Canadian Institute of Chemistry and during last year, was secretary of the Canadian Chemical Association, a national organization with local branches made up of those interested in chemistry from any and every standpoint. We also transmit to our readers, Mr. Westman's cordial invitation to drop in and see him in Toronto at 366 Adelaide Street, West.

With the thermometer hovering about the upper nineties, our thoughts seem to run more or less to liquids. And now we turn to "Water—As a Chemical Raw Material," as expounded by Charles P. Hoover, chemist in charge of the Columbus, Ohio, Water Softening & Purification Works. He is a graduate of Ohio State University and after three years as assistant chemist of the works under the direction of William R. Copeland, in 1911 was promoted to the position he now fills. He was consulting chemist for the Hocking Valley Railroad, having charge of all its water supplies from 1913 through 1926. He is the designer of water softening plants for ten cities; consultant to eleven water works plants; and has personally assisted on the design of plants for the manufacture of alum and the application of alum to water for eleven other water filtration plants. He is a member of the American Chemical Society, the American institute of Chemical Engineers, the American Water Works Association, and the Engineers' Club of Columbus, and is the author of many papers on water softening and water purification. "Good wine needs no brush" but water—well, water is a good deal more than H_2O, as Mr. Copeland points out.

We can recall the names of but two or three men who have had as thorough an experience in chemical cost accounting as Thomas A. Stewart now of Vero Beach, Florida. Among his connections have been public accountant with West, Flint & Co., New York, the bulk of whose business is chemical accounting; office manager with the Calco Chemical Co.; and finally chief accountant with the National Aniline & Chemical Co. He is now retired from this phase of his profession and consequently is not only qualified but, professionally able and willing to discuss the rather delicate and highly debatable subject of chemical cost accounting.

COMING FEATURES

RECENT ECONOMIC CHANGES WITHIN THE CHEMICAL INDUSTRY

Dr. Willard L. Thorp of Amherst begins in our next issue a series of broad-visioned, practical discussions of the changing structure of our chemical industry. His first article will deal with what the new scale of production means to manufacturers.

GENERATED VS. PURCHASED POWER

K. M. Irwin, M. E., of the United Gas Improvement Co. presents an engineer's analysis of the factors determining this important choice.

CHEMICALS IN AVIATION

Major Donald M. Liddell sums up the contributions of the chemical industry to airplane manufacture, one of tomorrow's big chemical consuming fields.

INCREASING PROFITS THROUGH ECONOMIC RESEARCH

R. H. Dick, president, Barrington Associates, a practical, working economist points out how economic research may better serve modern industry.

"Concannon of Commerce," as he is familiarly known among un-diplomatic circles in Washington, is fortunate in being able to indulge so regularly in one of his two favorite hobbies, (See "WHO'S WHO IN THE CHEMICAL INDUSTRY," page 88 of the rare, unexpurgated, first edition, price $6.00 net, address 25 Spruce st., New York, *advt.*)but have you noticed how this habit is spreading among chemical executives? Mr. Concannon's fellow public servants, Lewis Marks (Alcohol Institute) and Charles Brand (Fertilizer Association) have followed in his wake. So have Edgar Queeny, John J. Watson and Gus Ober, Cressy Morrison, John Kienle, Dr. Alfred Burdick and—but anything like a roster of the industry's summer visitors to Europe would require another edition of Who's Who.

Dr. G. H. Gehrmann, medical director of the E. I. du Pont de Nemours & Co., Inc., is an old acquaintance to readers of CHEMICAL MARKETS. He is an outstanding authority on theoretical and practical health hazard control in an industry where such control is a difficult task. He is one of the chemical industry's best emissaries to other industries and the public at large, regarding the health work which is being done by the industry.

August Merz, who tells the story of the early days of the dye industry in this country, needs of course no introduction to anyone connected with the chemical industry. The ability which has characterized his public services to many branches of the industry as a trade association leader and the wide circle of friends his character and kindliness have won, made him one of our outstanding personalities.

The publicity concerning the I. G.—Standard Oil agreement on hydrogenation has brought an old chestnut in a new light. It goes something like this. Getting chemicals out of oil is very like getting oats out of a certain well-known form of fertilizer. It takes a bird to do it